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The Inspiration of History

THROUGHOUT the centenary celebration which has been conducted by the L.M.S.R. to mark the one hundredth year of completion of the London & Birmingham Railway, the keynote has been that this was not merely an antiquarian orgy, but the representation of a century of progress from which inspiration might be drawn, designed so that all might feel that sense of history which was not the least among those factors which make for national self-consciousness, solidarity, and purpose. It was thus that Lord Stamp characterised the proceedings when he presided over the centenary banquet on Monday, of which we publish an account on pages 879 to 882. The principal guest was the Duke of Gloucester, and he struck the same note when proposing the toast of the L.M.S.R., emphasising also the fact that the coming of the steam locomotive altered the whole aspect of human life and the whole course of civilisation. "Until that time," he said, "the greater part of the population was virtually immobile and few persons strayed further than ten miles from their home." Among the many proud traditions of which the L.M.S.R. is the inheritor, the Duke emphasised the long and uninterrupted association of his family with the West Coast Route, covering the period of 90 years since that time in 1848 when Queen Victoria first travelled by train from Balmoral to London. His Royal Highness accepted the first specimen of a commemorative medal struck by the L.M.S.R. to enable reply to be made in kind to the various complimentary tokens of the sort received from abroad. This medal should be particularly appreciated in view of the widespread interest which has been taken in the events associated with the one hundredth anniversary of the completion of the Main Line to the North. The banquet on Monday, for example, was not merely a domestic affair but, besides the Duke of Gloucester and members of the British Government, was attended by the Belgian Ambassador, the German Ambassador, and Dr. Dorpmüller, the German Minister of Transport.

* * * *

The Group Terrific

Sir Ralph L. Wedgwood, Chief General Manager of the L.N.E.R., replied in his speech at the Retired Railway Officers' Society on Tuesday (reported on page 883) to some of the advice lately offered by the daily press to the railway companies. A few days earlier the *Daily Express* had proposed further amalgamations, suggesting the northern lines as suitable ones to begin with. There were, said Sir Ralph Wedgwood, various forms of retort to be used in meeting unsolicited advice, but against such a proposal he uttered what he described as "the appeal pathetic." The idea that if the present groups were bigger they would necessarily become better did not convince him. As now formed, the constituents of the four main lines retained their personal traditions while working harmoniously together for the common good. Sir Ralph Wedgwood recognised such survival of earlier personalities as a factor in keeping the good will of the public towards the railways when he said that one thing he feared from further amalgamation was the production of units "too big to be popular," as well as too mixed to be happy. Nationalisation might have to come, but in the meanwhile, Sir Ralph concluded, "let us have no half-way houses." These sentiments have been supported in an interview to the *Daily Express* by Lord Stamp, Chairman of the L.M.S.R. wherein he said that already his own company and the L.N.E.R. worked together so closely by pooling and other measures that further economies to be achieved by amalgamation would be small.

* * * *

The Week's Traffics

Receipts of the four main line companies for the past week fell £191,000 in comparison with the corresponding week in 1937. In the 44th week the net decrease was £82,000. For the 45 weeks to date the aggregate decrease is £5,294,000.

	45th Week				Year to date	
	Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or Dec.	
	£	£	£	£	£	%
L.M.S.R. ..	− 7,000	− 85,000	− 17,000	−109,000	− 2,391,000	− 4·17
L.N.E.R. ..	− 8,000	− 39,000	− 14,000	− 61,000	− 1,797,000	− 4·28
G.W.R. ..	—	− 16,000	− 12,000	− 28,000	− 950,000	− 3·94
S.R.	+ 8,000	− 3,000	+ 2,000	+ 7,000	− 156,000	− 0·82

Merchandise traffics of 1938 continue to show decreases in comparison with 1936, as indicated below:—

	45th Week				Year to date.	
	Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or Dec.	
	£	£	£	£	£	%
L.M.S.R. ..	+ 19,000	− 59,000	+ 4,000	− 36,000	+ 75,000	+ 0·14
L.N.E.R. ..	+ 2,000	− 31,000	+ 4,000	− 25,000	+ 152 000	+ 0·38
G.W.R. ..	+ 6,000	− 7,000	—	− 1,000	+ 338,000	+ 1·48
S.R.	+ 19,000	− 500	+ 500	+ 19,000	+ 648,000	+ 3·53

Passenger train traffics in the 45 weeks of 1938 show an improvement of £2,609,000 in comparison with the corresponding period of 1936, and coal receipts are £949,500 up, but in merchandise there is a fall of £2,347,500.

* * * *

Public Corporation for Air Transport

In March of this year the Cadman Committee published its report on civil aviation, a document that earned wider public notice than most of its kind by reason of certain criticisms against the organisation of Imperial Airways. Among the recommendations of the report was that Imperial Airways should be reorganised to concentrate upon long-distance and Empire transport, leaving most of the European services to be worked by British Airways. As

both companies were then operating between London and Paris, it was suggested that their services on this section should be amalgamated, and maintained by a new company in which Imperial Airways and British Airways would have a *pro rata* shareholding. Events have marched faster than foreseen by the committee, for now a statement by Sir Kingsley Wood in the House of Commons on November 11 has announced the imminent introduction of a Bill to set up a public corporation which would acquire the undertakings of both companies by the issue of fixed-interest stocks guaranteed by the Government. Such a step recognises a further principle enunciated by the Cadman Committee, namely that the dividends of Government-assisted air companies should be restricted to public utility rates.

* * * *

Overseas Railway Traffics

The official change in the value of the Argentine peso caused a decrease of £2,018 in the sterling amount of the Buenos Ayres & Pacific Railway traffics for the past week, although in currency there was an increase of 27,000 pesos. In the previous week, while the rate of exchange was still 16·12 pesos to the £, this company had a decrease of £1,054 and of 17,000 pesos, and the Buenos Ayres Great Southern one of £497, or 8,000 pesos. The B.A. Western in that week showed an improvement of £1,551, or 25,000 pesos. Central Uruguay traffics have improved by £2,976 ($25,486) during the past fortnight.

	No. of Week	Weekly Traffics	Inc. or Decrease	Aggregate Traffic	Inc. or Decrease
		£	£	£	£
Buenos Ayres & Pacific ..	20th	70,873	– 2,018	1,391,938	– 169,820
Buenos Ayres Great Southern ..	20th	116,981	– 15,091	2,389,190	– 18,813
Buenos Ayres Western	20th	45,755	– 3,004	765,916	– 143,204
Central Argentine	20th	94,517	– 22,682	1,992,434	– 588,899
Canadian Pacific .. .	45th	652,600	+ 42,200	24,108,800	– 467,800
Bombay, Baroda & Central India	30th	238,650	+ 27,300	5,198,025	– 60,825

During the past fortnight the Canadian Pacific Railway has improved its traffic position to the extent of £200,200.

* * * *

The Argentine Great Western Meeting

A major point in Mr. J. A. Goudge's speech at the meeting of the Argentine Great Western Railway, reported on page 885, was his reference to the six per cent. increase in costs likely to result from the new exchange decree. It was hoped, he said, that the Argentine Government would be able to take some measures which would relieve the railways in their desperate plight, as it was becoming increasingly clear that the Great Western was nearing the end of its financial tether. No capital reconstruction scheme had yet been prepared, but it was obvious the company could not go on indefinitely spending money —which had hitherto been supplied by the Buenos Ayres & Pacific, to which £550,000 was owed—without some possibility of issuing capital. Last year £155,000 had to be spent on rolling stock for the development of the staple traffic—wine and fruit. Goods traffic has maintained its steady improvement and the bus service is now on a financially satisfactory footing. Railway passenger traffic on local services had dropped from 2,000,000 to 250,000 in the last fifteen years, but there was no necessity to deplore this, Mr. Goudge stated, since he did not know of one single instance in Argentina of suburban traffic paying its way. The deficiency had been more than made up by the 3,370,000 passengers now carried in the company's buses, and in addition it had been found possible practically to suppress a non-paying rail service.

* * * *

Engineering Students and Economics

Lord Ashfield, in presenting the prizes to the students of a large engineering college in London recently, drew attention to what is generally regarded as one of the weaknesses of the curriculum in the technical colleges in this country, namely, the omission of any specific instruction in the subject of engineering economics. It is not sufficient, he said, for an engineer to have an adequate technical knowledge; he must also be able to consider the problem from a financial and commercial point of view. In particular, Lord Ashfield referred to the problem which the engineer has to face of determining the economic life of the structure or the engine which he designs, this economic life being something distinct from the period of its physical life. The failure to envisage the onset of what the accountants term "obsolescence" may have a disastrous effect on the financial stability of an undertaking. Obsolescence is nearly always brought about by advances in technique or by new discoveries and inventions, and the engineer must, therefore, keep in touch with what is going on in the field of technical and scientific research. It should be noted that certain of the technical institutions include engineering economics among the compulsory subjects in the examination for associate membership, but the technical colleges have generally shown a complete disregard of this important phase of the training of young engineers.

* * * *

Exceptional Loads by Rail

The practice of the Great Western Railway in dealing with exceptional loads by rail was referred to in a paper read on Tuesday last before the Ashford (Kent) Section of the Permanent Way Institution, by Mr. H. J. Bussell. The free interchange of exceptional traffic between the main railway systems in Great Britain is hampered by the multiplicity of load and structure gauges, and there is need for greater uniformity. The cost of introducing the gauge known as the Continental Berne Gauge fixed in 1912 would be prohibitive, and the committee of 1919 recommended an intermediate gauge. The Ministry of Transport prepared in 1928 a publication in which a maximum load and minimum structure gauge is given, and the advantage which would be gained by the adoption of a uniform gauge by all the British main-line companies is fully appreciated. Mr. Bussell suggests that the present is an appropriate time for the companies to approach the Government with this object in view and to obtain a guaranteed loan for the purpose. The full text of Mr. Bussell's paper, with the calculations and graphs and a description of the templated coach used by the Great Western Railway engineers for ascertaining and recording clearances, appeared in the *Journal of the Permanent Way Institution* for April, 1937, the paper having originally been read in February of that year.

* * * *

The Vital Factor in Argentine Transport

Commenting on the new road construction programme in Argentina, which contemplates an expenditure during the current year of 40,000,000 pesos, the paper *La Nación* recently emphasised that it was well to remember at all times that the road formed only one part of the general scheme of communications. What the railways had done for Argentina, the article continued, was so great that it could never be forgotten. The lines spreading over the land led to the intensification of provincial and urban activities and created also the necessary social intercourse which helped to strengthen the unity of the nation. The vast size of Argentina moreover made long-distance haulage by rail a vital factor in the nation's transport. In paying a tribute to the efficiency of British-owned Argentine railways and their readiness to adapt themselves to modern needs, *La Nación* said that suburban

electrification, higher speeds, railcars, and notable improvements providing comforts which it was once thought could be supplied only in buildings, were signs that the railways would keep abreast with the demands made on them, and maintain their services on a high level. Since 1933 a total of some £10,000,000 has been spent on road development in Argentina, as compared with only £13,000,000 in the 40 years to 1929.

* * * *

Passimeter Booking Offices

The modern type of booking office, in which the booking clerk combines his normal function with that of ticket collector, is not in all circumstances of advantage to the travelling public. In general, the arrangement is that ingoing passengers book at the window on one side, and that passengers terminating their journey deliver up their tickets at a window on the other side. But difficulties inevitably arise when at a station so arranged a train arrives a minute or so before another is due to leave, and only one booking clerk is on duty. Is he to suspend booking of ingoing passengers while he collects the tickets of outgoing passengers, so causing some to miss their train who had a reasonable expectation of catching it? Or is he to hold up the outgoing passengers until the issue of tickets has ceased? This is a problem which at some stations still remains unsolved. Another problem is that of the season-ticket holder, who in virtue of making his contract has a right to expect free ingress to platforms, and can with reason complain if he is held up behind a queue of ticket-buying passengers in the narrow passimeter channel. Some busier stations have a special opening, manned by a collector, for season-ticket holders during rush hours, but by no means all; and we speak feelingly, having nearly missed a train recently for which we held a ticket and had allowed ample time, owing to ticket-booking passengers in line ahead obstructing the platform entrance.

* * * *

Paris—Le Mans Automatic Signalling

As traffic conditions justified the abandonment of manual signalling on the Paris—Le Mans line of the former French State Railways, a very complete system of colour-light automatic signalling was installed. The installation was, for reasons of economy, carried out concurrently with the introduction of the 1,500-volt d.c. system of electric traction on this section. In the substations, emergency diesel-electric generating sets provide against power failure; the engines are kept warm by thermostatic control and are clutched in to a flywheel normally rotated by a synchronous motor which, when the diesel engine is running, becomes an alternator. The change from normal to emergency current supply is effected within five seconds. An interesting feature of the work is the use of the automatic signals to prevent trains from entering an overhead-wire section that has been rendered dead. The signal in the rear is held showing the absolute stop aspect and the train, then precluded from passing under the ordinary permissive rules, must communicate with the controlling station. The track circuits used are, of course, of the a.c. impedance-bond type.

* * * *

Higher Speeds—Smaller Loads

The demand for higher speeds in passenger service on railways again brings to the fore the question of the train loadings to which an engine should be assigned. It is, however, very desirable that higher speeds should not be achieved at the cost of reducing any more than is essential the carrying capacity of trains, and only on the basis of tests can this matter be suitably disposed of. In dealing with this subject in a recent issue, our American contemporary the *Railway Mechanical Engineer* remarked that some railway managements appear too willing to jump to the conclusion that drastic reduction in tonnage ratings must be made whenever schedule speeds are increased. Tonnage reductions of 50 per cent. are sometimes made, as evidenced by one specific case, in which the rating of a rebuilt locomotive was reduced from 4,000 to 2,000 tons, whilst in another case it was considered necessary to reduce the tonnage rating of a certain class of locomotive from 2,700 to 1,500 in order to ensure punctual running on a new and faster schedule. As a matter of fact, with the engine in good condition and suitable handling to secure maximum output, it was subsequently shown that this locomotive could handle trains of 1,800 tons loading and meet the operating schedule without particular difficulty.

* * * *

Maintaining Locomotive Components

Several railways in America have studied, or are studying, the building up or resurfacing of worn locomotive parts by metal spraying, using corrosion resistants. The metal is sprayed from an air-turbine gun after being heated to a molten condition by an oxy-acetylene flame. The system is being used for building up piston rods, reversing gear, stoker parts, air-pump piston rods, and injector parts. These, as well as many others, have been successfully built up to size and it has been found that they wear much longer than the original ones. For example, a metal-sprayed and a new pump plunger were tested recently and it was found after each had run the same length of time that the built-up plunger had worn 30 per cent. less than the new one. One of the United States railways which has been using metal-sprayed equipment since 1931 reports an annual return on its investment of approximately 350 per cent. The same principle has been used in this country, mostly with efficient results, and it is found that worn components restored by building up in the manner described can be successfully machined with the same degree of accuracy and durability as new material. Our contemporary, the *Railway Mechanical Engineer*, commenting on the subject, states that many railways are overlooking a device which can aid materially in cutting maintenance costs and improving the surface of a very considerable list of specific parts of locomotives and railway stock.

* * * *

The Wrong, Wrong Trail

An extraordinary case, embodying three failures of the same human element, came to our notice recently. The principal actor in this trilogy of ineptitude, a gentleman well versed in railway lore, tearfully confessed to us that thrice within the space of a week his brain had mis-read signals. *Imprimis*, he boarded a train at King's Cross, hoping to reach New Southgate, only to be jettisoned in wrath at Bowes Park; item, he reached Victoria in time to see a train for Sutton leaving 7 minutes early according to his interpretation of the timetable; finally, Earls Court-bound (he trusted) per "District," he was compelled to alight panicstricken at Sloane Square, as the train had ideas considerably beyond his station—Hammersmith in point of fact. Laughing softly, we asked if he couldn't remember a couple of solecisms on G.W.R. and L.M.S.R. territory, so as to convert the trilogy into a pentateuch, but he was not amused. Well, everybody knows that ancient ditty: "What shall we do with the drunken sailor?" but our question, gaining in pungency what it loses in scansion, is: "What shall we do with the addlepated railwayman?" A truly rhetorical question, for answer at present have we none. . . .

Burma Railways in 1937-38

THE Burma Railways, comprising 2,060 route-miles of metre-gauge line, formed part of the Indian system until 1937, when the separation of Burma from India, under the Acts of 1935, carried with it provision for the bestowal of autonomy on the railways. This change took effect from April 1, 1937, as reported in THE RAILWAY GAZETTE of April 2, 1937. The control of the railways, since April 1 of that year, has been vested in a Railway Board, and the annual report, just received from the Chief Railway Commissioner, is the first to be issued by the board since its formation, and the first annual report on the Burma Railways since their separation from the Indian system. Prior to the universal depression the railways enjoyed a fair degree of prosperity, and the traffic yielded a good return on the capital invested. Since the depression began, however, the system has been operated at a loss, although a steadily decreasing one. In 1932-33 the deficiency was as much as Rs. 70,38,520, gradually falling to only Rs. 10,32,238 in 1937-38. In spite of the adverse conditions prevailing during the latter period, and after providing for depreciation at the rate laid down by the Indian Railway Board for the year 1936-37—which is one-sixtieth of the capital at charge—the net earnings amounted to 3·18 per cent. on that capital. The standard rate of interest has not yet been agreed, but the rate paid was 3½ per cent. resulting in the above deficit of Rs. 10,32,238, against Rs. 25,74,034 for the previous year.

Receipts did not respond as they should, in the year under review, to the increase in the sea-borne trade of the country. Unregulated road traffic continues to take a heavy toll of both goods and passenger earnings. The number of private cars and taxicabs imported increased from 823 to 1,313, and of omnibuses and lorries from 142 to 938, during the year, bringing the total number of registered vehicles up to 17,252 on December 31, 1937, an increase of 11 per cent. and 4 per cent. over 1935 and 1936 respectively. Apart from this, low rice prices, after untimely rains and a late harvest adversely affected goods traffic, and passenger traffic also suffered from the same cause, through the reduced spending power of the people. About 27 per cent. of the gross receipts is derived from passenger traffic and 18 per cent. from rice and rice products, so that any serious fall in these items must have a marked effect on the results of working as a whole. The principal statistics of working are as follow:—

	1937-38	1936-37
Passengers	19,403,179	20,272,778
Goods, tons	3,970,718	3,856,742
Train-miles	7,234,000	—
Operating ratio, per cent.	70·68	69·68
	Rs.	Rs.
Passenger receipts	90,88,990	95,98,949
Goods receipts	2,53,47,943	2,54,34,866
Gross earnings	3,74,47,614	3,83,06,706
Working expenditure (including depreciation)	2,64,68,025	2,66,90,293
Net earnings	1,09,79,589	1,16,16,413
Capital at charge	34,58,13,000	34,69,13,000
Interest charges	1,20,11,827	1,41,90,447
Deficit	10,32,238	25,74,034

Graphs given in the report illustrate clearly the dependence of the railways on the traffic in rice and rice products. It is also interesting to note that 63 per cent. of the total goods handled consists of indigenous products, agricultural, mineral, forest, and livestock. In some cases an increase in tonnage has been accompanied by a fall in earnings, owing to the reduction in rates rendered necessary by road competition. Another important staple traffic is salt, and in this case proposals have been made for either a wagon ferry or some form of container service to allow of transport in bulk across the Salween River and avoid transhipment. After investigation, it has been decided not to proceed with the proposal to employ diesel railcars on the Rangoon suburban services, referred to in the last annual report. It is, however, proposed to abolish first class on the suburban trains, and other economies are under consideration in connection with these services, to meet the ever-increasing loss owing to road competition. On the expenditure side the principal item of increase was quite beyond the power of the administration to control; this was the estimated cost of repairing the damage caused by floods during the period, amounting to Rs. 8,44,000. The board sanctioned the reopening of the Organisation Department from June 1, 1937, and it has now been decided that the department shall continue for another year. Appreciable economies have been obtained as a result of its activities, and further savings are expected. In its concluding remarks the board, at the end of the first year of its administration, makes some observations on the present transport situation in Burma. It claims that the railways, in handling the country's products at very low rates, are fulfilling a great public service. Of the three principal means of transport, river and rail contribute their due share to the revenues of the States, but this cannot be said of all road transport. The railway, one of the greatest industries in the country, employing some 22,000 men, is now the property of the taxpayer, and he is vitally interested in its prosperity. The board hopes, therefore, that public sympathy and support for this undertaking will not be lacking, so that this great asset may continue to be a permanent source of national wealth.

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Disposal of Railway Scrap

"MONEY for old rope" is an expressive, if to be deprecated, modern colloquialism, yet it contains a germ of truth, for there is certainly value in old rope and other scrap materials, as the British railways have not been slow to realise. Their annual expenditure on maintaining and renewing their permanent way, buildings, signal boxes, signals, and other equipment, approximates to £20 millions, while an even larger sum is spent on the construction and repair of locomotives, carriages and wagons; consequently the work of reclaiming and disposing of scrap and old materials to the best advantage is an important part of the activities of the railways' respective stores departments. As will readily be appreciated, an almost endless variety of such materials becomes available from time to time and the problem of dealing with them in the most economic manner has been approached by the companies along several lines. Increasing attention has been given, for instance, to the methods adopted for reclaiming scrap, in order to ensure that the potential market value is not unnecessarily depreciated. Experience has also shown that the substantially enhanced prices which can be obtained as the result of carefully examining and grading the scrap amply justify the additional expense involved in sorting. In recent years particular attention has been given to the necessity of ensuring that nothing is sold for scrap which can be reconditioned for further use at an economic figure.

Generally speaking, scrap metals such as iron and steel are sorted and graded at the producing points, but the more valuable non-ferrous metals are frequently sent to central depots for this purpose. A steady demand usually exists for scrap metal of all descriptions, and the companies have no difficulty in disposing of their available supplies. Heavy tonnages of steel rails find a ready market for re-melting purposes, while a substantial quantity is sold for reheating and rerolling into colliery arches, bedstead angles, and so on. Old sleepers are in constant demand for flooring purposes and also, when sawn into four longitudinally, for gate posts and fencing,

while the lowest grades are sold for firewood. Coal, of which the companies purchase over 15 million tons annually, leaves only a residue of ashes and flue-dust, but many thousands of tons of these materials are sold for making pathways and also for use in connection with the construction of sports grounds and tennis courts, etc. A keen demand exists for old railway carriages as, with suitable internal alterations, they make ideal summer bungalows, while railway wagon and cartage tarpaulins, which are sold in different grades and sizes, are purchased for a variety of uses.

Old electric cables and wiring, pneumatic covers and inner tubes, as well as old motor and horse vehicles are eagerly sought, as also are old lead battery plates and battery mud (lead peroxide). Old pieces of cloth, moquette, trimmings and similar material left over from the upholstery of carriages are readily marketable, as well as cord from luggage racks. Mooring ropes, which are used so extensively at the companies' docks, are converted into rope fenders when they become unsuitable for their original purpose, and in due course the fenders are sold as scrap. Among the lighter side of the sale of railway scrap materials may be found such articles as engine nameplates which, to meet the requests of purchasers, are polished or relacquered at a moderate charge; also old station hand-bells and even old halts and stations, with or without modern conveniences, are occasionally for disposal. Used railway tickets are sold in large quantities and particular attention is given to the systematic collection and disposal of waste paper, not only for the purpose of securing its cash value, but in order to avoid the risk of fire which is inherent in any large accumulation of this material.

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German Railway Progress in 1937

THE annual report of the German State Railway, the financial portion of which was reviewed in these columns on August 26 last, contains also some interesting information regarding the maintenance and operation of the system during 1937. The report covers the first period of the new organisation since the whole of the railways formerly worked by the State Railway Company reverted to the Reich on February 12, 1937. The length of line in the whole system was 54,522 km. (33,879 miles). Although the distance under electrical operation had increased by only 3 km. (to 2,287 km.) good progress was made with the work on the extension of electrification, and a start was made with the substitution of d.c. for a.c. on the Hamburg suburban system. The 100,000-volt power line from south to north had reached Nuremberg. Hollow cast-iron pylons will be used wherever possible as these require from 22 to 25 per cent. less metal than those of the lattice type. The shortage of metal is also being felt in track maintenance, aggravated in the latter case, also, by a lack of the necessary labour. Rail replacements are being deferred wherever possible and, in renewing sleepers and ballast, the existing rails are being re-used in certain sections. The whole programme of maintenance and renewals was subordinated to the national planned economy, but notwithstanding this, as we had occasion to remark in these columns as recently as September 2, no deterioration is to be observed in the standard of service to the public.

Notwithstanding the increase in traffic, the number of locomotives in service has been maintained at the same figure as in 1936, and the number of wagons was 10 per cent. less, thanks to the improved utilisation of rolling stock. Among the measures introduced to obtain this improvement was the increased use of rail tractors in goods yards, enabling goods trains to pick up without shunting delays, with the consequent acceleration of goods traffic generally and improvement in running time. The number of such tractors (mostly diesel) was increased from 1,082 to 1,127. Other measures have been put into force, directed towards the more efficient use of rolling stock. At the same time locomotive repairs have been speeded up and shop and shed methods improved, so that the distance run between general repairs was increased to 124,000 km. (77,051 miles) against 120,000 km. (74,565 miles) in 1936. Coal consumption rose from 13·72 *tonnes* to 14·20 *tonnes* per 1,000 locomotive-km., but the consumption was really 1·4 per cent. less when measured on a ton-mile basis, owing to the heavier train-load. A new type of streamlined locomotive was ordered from Borsig for express work, and is designed to reach a maximum speed of 175 k.p.h. (109 m.p.h.). Experiments concluded towards the end of 1936 showed that there is an advantage of 15·2 per cent. in fuel consumption in the use of streamlined locomotives, as compared with similar ordinary engines.

The use of railcars continues to increase, and at the end of 1937, 8·3 per cent. of the whole of the passenger train service was being performed by railcar, against 7·6 per cent. in 1936 and 6·1 per cent. in 1935. New types of railcar are being tried, as described in our *Diesel Railway Traction Supplement* of September 2, page 434. The use of lignite and national fuels is being extended. An interesting detail is mentioned in connection with passenger traffic; 29,800 telegrams were despatched by passengers in trains during the year, and this popular service continues to increase. Signalling is being adapted to meet the requirement of higher train speeds, and a distant signal 1,000 m. from the principal signal is being standardised, while an increased number of level crossings have been fitted with apparatus for actuating the A.T.C. on an approaching train if the barriers are not closed. Maximum speeds permissible on the 23,000 km. (14,292 miles) of standard gauge secondary and branch lines have again been raised. The improvement in this respect is evidenced by the following figures:—

Permissible speeds	Percentage of lines 1937	1936	1927
Up to 40 km.p.h.	19·3	21·5	69·6
From 41 to 50 km.p.h. ..	54·2	55·6	29·5
,, 51 to 60 ,, ...	24·6	21·8	0·9
Over 60 km.p.h...	1·9	1·1	—

In reading the above figures it should be borne in mind that up to quite recent years the whole of the German railway system, main and secondary lines included, was subject to very rigid maximum speed limits. Even in 1931 there was only one run (of 30 miles) timed at as high a speed as 58 m.p.h., whereas last summer there were 246 runs daily totalling 14,365 miles. The raising of the speed limits has been brought about by extensive improvements to the permanent way, including its alignment. Finally the report shows that salaries and wages accounted for 66·33 per cent. of the total expenditure, while the number had increased to 703,600 units, or 43,600 more than at the end of 1936. But as traffic had increased to an even greater extent, the mean was 2·13 employees per 100,000 axle-km. against 2·22 per axle-km. in 1936.

LONDON & BIRMINGHAM CENTENARY BROCHURE.—A limited stock of the London & Birmingham Railway Centenary Souvenir Booklet, issued by the L.M.S.R. in connection with the recent centenary, is still available, and while the supply lasts copies may be obtained at the special reduced price of 3d. each, post free, from the Advertising and Publicity Department, Room 400, Euston House, Eversholt Street, N.W.1, or from the District Passenger Managers' Offices at Euston and Birmingham (New Street station) respectively.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Locomotive Driver or Engineer?

Associated Society of Locomotive Engineers and Firemen,
9, Arkwright Road, N.W.3
November 14

To the Editor of The Railway Gazette

Sir,—In the query raised by your letters on "Locomotive Driver or Engineer?" it would appear that very fine points of definition are likely to arise. In fact my mind goes back to a serious dispute in the railway industry over the word "definitive," but this question will not assume such dimensions. It is necessary, however, to correct a statement in Mr. Harrison's letter in your November 11 issue, and point out that enginemen must possess technical and other mechanical knowledge of the locomotive by serious study and research; and this, in addition to what "they have learnt through their daily occupation." In fact, unless they have mastered this technical and mechanical knowledge as cleaners and firemen and are able to pass very rigid examinations they never become enginemen or engineers.

Moreover, as the title of our society, The Associated Society of Locomotive Engineers and Firemen, has included the word "Engineers" for the past 58 years without challenge, one need not be concerned about opinions as to definition at the present time. The fact remains that the engine driver has to pass various technical examinations, possess full knowledge of the locomotive, its mechanical failures and remedies and in cases of breakdown deal with same as stated in my letter of October 21. Unlike the motorcar driver who 'phones the nearest garage for assistance, the steam engineman has to deal with the breakdown himself in accordance with his mechanical knowledge and skill, plus training and successful passing of technical examinations. For these reasons I cannot agree that a new title is necessary for our organisation, neither should there be any doubt as to its necessity or origin.

Yours faithfully,
W. J. R. SQUANCE
General Secretary.

Electric Motors for Cranes

Chorleywood, Herts,
November 12

To the Editor of The Railway Gazette

Sir,—Mr. Jack's letter in your current issue is very interesting. It is true that I pioneered the a.c. variable speed commutator motor in this country in its application to pumps. Its effect was to give the best load factor possible in the conditions and therefore in most cases a cheaper rate for current; it also minimised control gear, and wear and tear thereon. In these days it was a little low in power factor and efficiency at the low speeds. I still think its use, driving of course a reciprocating pump, new or converted, in combination with cutting down pressure water consumption by conversion of the most used 70 per cent. loss hydraulic machines to 70 per cent. efficiency electric, and the elimination of pipe and valve losses, to be the most effective way to change over a steam hydraulic installation, and that likely to give the cheapest overall results.

I entirely agree with Mr. Jack as to the suitability of these motors for crane driving and I said in my article (second paragraph, page 324, August 19) that they were ideal but that I was unaware of their having been applied to any extent in this country, the main drawback being their expense. I am glad to hear of their applications as a result of improvements effected in their design and in widening the limits of their speed variation. Presumably their expense—if it is still high and if a specially good thing can be called expensive—will be partly cancelled out by reduction in control gear. So will the maintenance of the latter, which is an important point.

The wide control of lowering speed by regeneration is likewise both new and important as a feature of a crane motor. The effect of these developments should be to eliminate any need in future for Ward Leonard or other motor-generator control on high-powered cranes, *e.g.*, for coaling, grabbing, and so on, or for any conversion to d.c. In fact this motor will apparently give results rather better if anything than d.c.

Except that a.c. is not generally available on ship board it would also be eminently suitable for ships' cranes, for the lifting motor of which the d.c. series characteristic does not provide a wide enough speed variation; as well as for winches, and for capstans which have to stall on load.

Yours faithfully,
J. DALZIEL

French Locomotive Boiler Explosion

Sidcup, November 12

To the Editor of The Railway Gazette

Sir,—On page 125 of your July 15 issue a description is given of a boiler explosion of a P.L.M. locomotive due to lack of water in the boiler, and a statement is made at the top of the page that "Klinger water gauges are used on locomotives of the type concerned." This sentence has come to the notice of the chief mechanical engineers of several railways using our water gauges and has created a feeling of uneasiness in their minds. Our attention was drawn to the article by them, and we accordingly got in touch with the French railway authorities in order to ascertain the true facts of the case.

We have now received a letter from the Chief Mechanical Engineer's Office of the South Eastern Region of the French National Railways which was shown to your representative in the original by Mr. Hoes. This letter states that the locomotive in question was not fitted with a water gauge of our manufacture, and the mistake appears to have arisen owing to the fact that the report of M. Chan, which appears to have been used as a basis for your article, stated "Appareils du *type* Klinger a niveau très apparent." The gauges on the locomotive in question were actually manufactured by the railway company itself and were of the reflex type originally patented by us. In addition the railway authorities have informed us that the explosion was in no way due to any defects in the water gauges.

We should be obliged to you, therefore, if you would correct the unfortunate impression which has been created in the minds of certain people, by pointing out that the water gauges used were not of Klinger manufacture although they were of the Klinger type, and secondly that in any case the water gauges were not to blame.

Yours faithfully,
RICHARD KLINGER LTD.
W. E. HOES, *Director.*

Two a Side or Three a Side?

Bristol, November 11

To the Editor of The Railway Gazette

Sir,—Might not one more point have been added to those enumerated in your editorial comment on page 809 of The Railway Gazette of November 11 under the above heading? What I think *does* appeal most to the railway passenger who is fortunate enough to be able to afford first class travel is that in the two-a-side compartments *every* seat is a corner seat, and consequently no one is condemned to sit "in the middle." This, to very many people, means a great deal more than anything else associated with the arrangement and use of railway carriages.

Yours faithfully,
E. C. LAKE

[Our correspondent must not overlook the fact that the two-a-side arrangement does not add to the number of corner seats; all compartments whatever their seating capacity offer four such seats.—Ed., *R.G.*]

PUBLICATIONS RECEIVED

Old Euston. By G. Royde Smith. London: Published by Country Life Limited for the London Midland & Scottish Railway. 10 in. × 7½ in. 70 pp. plus 6 plates. Price 7s. 6d. net.—The centenary of any great enterprise is certain to produce a spate of writings on the early years of the undertaking, as it is by means of the printed word most persons are able to understand and appreciate the event being celebrated. During the past few weeks the L.M.S.R. has suitably marked the one hundredth anniversary of the completion throughout of the original London & Birmingham Railway, and naturally the occasion has resulted in the production of many articles, brochures, and so forth. In a large number of cases these have been produced to meet the needs of the moment by writers possessed of neither the knowledge nor the enthusiasm necessary to undertake something of lasting character. We therefore welcome an outstanding exception to this generalisation in the form of the volume under review which, as the foreword indicates, was undertaken at the request of the directors of the L.M.S.R. so that the occasion of the centenary should be marked by an adequate historical retrospect. Advantage was accordingly taken of the wide knowledge of the company's archives and of early railway history possessed by Mr. G. Royde Smith, Assistant Secretary of the company, to commission him to produce this volume. It does not purport to be a complete history of the London & Birmingham Railway, but in fact most of the essential particulars of such a story find place within its pages, as the author has treated Euston as typical of the aims, aspirations, and achievements of the promoters of the original railway.

In justice to the painstaking work of its author, it is necessary to say that the book is characterised by accuracy and precision, but such a phrase should not be interpreted as meaning that he has produced a dry-as-dust tabulation of facts and figures. On the contrary, the whole volume is essentially readable, and throughout places railway facts in their correct local setting of sociological and industrial development. Mr. Royde Smith allows his enthusiasm for architecture to be revealed time and again, and his descriptions of the Doric Arch and the Great Hall at Euston are as fascinating brief accounts as we have read. The next chapter, which is embellished with a folding-plate facsimile of the ground plan of Euston station from Simms's "Public Works of Great Britain," deals with traffics and enlargements, and it is but a natural step then to consider the Bury locomotives which handled those traffics. For these engines the author exhibits an affection which leads him to pen a most able article in their defence.

A very engrossing section is entitled "Endless Correspondence" and is devoted to copies of interesting letters (many of them not reproduced before) from the files of the London & Birmingham Railway, between which the author has interspersed pithy comment. One of the curious points to which the author directs our attention is that with letters of a hundred years ago it was tradesmen only who used headed paper. Ordinary persons used plain sheets of notepaper, Government departments plain double foolscap, and the "nobility and gentry" expected their correspondents not only to know their addresses, but also to decipher their handwriting. The appendices to this book include a list of early directors of the London & Birmingham Railway and facsimiles of three timetables.—

CHARLES E. LEE

Early Railway Pamphlets, 1825-1900. London: The Gladstone Library, National Liberal Club. 9 in. × 5¾ in. 60 pp. Price 4s. 6d.—During the cataloguing of the pamphlet collection of the Gladstone Library at the National Liberal Club, a small collection of railway pamphlets was discovered, Many of them had apparently belonged to Gladstone, who, as Vice-President, and later President, of the Board of Trade from 1841 to 1845, was responsible for the railway legislation of 1844. As early brochures on railways, especially those items in private and semi-public collections, are not well known or extensively catalogued, the Library Committee of the National Liberal Club decided to print a list of these pamphlets. Accordingly, the present subject list has been issued. It is well prepared and classified both geographically and under subjects. Moreover, there are indexes of persons and of railways; the latter unfortunately contains a number of errors, but nevertheless we welcome this brochure as a valuable addition to railway bibliography.

Daily Mail Year Book, 1939. Edited by David Williamson. London: Associated Newspapers Limited. 7¼ in. × 5 in. 288 pp. Paper covers. Price 1s. net.—Next year's edition of this handy reference book, which now reaches its 39th year of issue, is being published today. To those who have long been familiar with its utility on the reference shelf it is sufficient to say that it fully maintains the standard of previous editions. To others who are not so well acquainted with its contents, it may be remarked that within the compass of fewer than 300 pages the compilers have found it possible to include a vast amount of accurate reference information; brief articles on important questions of the day; potted biographies of a thousand prominent men and women; and a complete list of the membership of the House of Commons, indicating the party allegiance of the member, the constituency he represents, which parties opposed him at the last election, and the majority which he secured.

In the present edition the article on "British Railways" is by the Editor of THE RAILWAY GAZETTE. Heretofore this three-page summary of the events of the past year has been contributed by Mr. H. G. Archer, but ill-health has prevented him from continuing this, and accordingly THE RAILWAY GAZETTE was invited to carry on the series; the acceptance of this offer was made easier by the fact that Mr. Archer's contributions have long possessed an enviable reputation for accuracy. Other railway references in the volume are included in the article "Changing London"; in a tabulation of long tunnels; and in a statement of London facts and figures.

Centralised Lubricating System.—We have received from Tecalemit Limited, Great West Road, Brentford, Middlesex, an illustrated booklet describing the Flex-o-matic one-line lubrication system, for supplying lubricant in controlled quantities from a central source to a group of bearings. Lubricant is stored in a compressor, from which it is delivered by a manual or electric pump, or by air pressure, to the injectors on the bearings which regulate the amount admitted. Where electric- or air-operated compressors are used, the system can be worked at the necessary intervals by pressing a push-button, or can be started and stopped automatically at such intervals by an electric timing device. All component parts of the Flex-o-matic system in its three forms are clearly illustrated and described in the catalogue, in which there is also a diagram showing how the system could be applied to a large press.

Electric Air Heaters.—Geo. Bray & Co. Ltd., of Leeds, has sent us a catalogue (No. C31) of electric air heating appliances. These heaters consist of Bray Chromalox strip elements mounted on suitable frames, and are supplied as a complete unit fitted into casings, or as interior units only, for fitting into ductwork. In each arrangement the elements are withdrawable from the casing complete with all connections, thus facilitating cleaning and maintenance. In all cases the elements used are totally enclosed in a high-temperature stainless-steel sheathing, with the resistor embedded in a refractory material and supported throughout its entire length. Not only is the resistor thus protected from mechanical damage, but, being enclosed, oxidation is reduced to a minimum, and since this is one of the chief causes of failure in electric elements, long life is ensured. All heaters are flash tested to 1,500 V. a.c. between the resistor and sheath before leaving the works. In all except the smallest size the number of elements enables the load to be balanced on a three-phase supply. The load can also be split up into two or more sections according to individual requirements of users.

THE SCRAP HEAP

The inscription underneath a pictorial poster of the Reichsbahn exhibited at a number of English railway stations reads:—

"Visit Mediæval Germany."

Nothing like being candid!

* * *

To encourage travel by train and as a convenience to mothers with young children, folding or collapsible perambulators, go-carts, and push-carts, and children's small sulkies with folding handles, are conveyed free in the Brisbane suburban area when folded up and accompanied.

* * *

According to *Woolmer's Exeter & Plymouth Gazette* of October, 1838, nearly 100 horses were sold by Mr. Dixon at his repository in Barbican, London. They had previously been employed to convey the Portsmouth, Southampton, and Exeter coaches. One thousand horses, mainly from coaches on the Great Northern road to Birmingham, Manchester, and Liverpool, had been sold in the preceding six months. A week or two later, the *Worcester Journal* recorded that the few remaining coaches on the road between Birmingham and London were "actually carrying passengers at 20s. inside, and 10s. outside." It was added that, of 22 coaches on that road prior to the opening of the railway, only four remained, and it appeared uncertain whether even that number could continue.

* * *

An American philosopher who had been visiting London left yesterday for his native country. Before departing he poured his thoughts out to me in a most lavish manner. "Britain is still the most wonderful country in the world," he said, "and there is no other city to compare with London. Where but here could you see traffic held up and disorganised three times in one week? Imagine the Opening of Parliament, the Lord Mayor's Show, and the Armistice Anniversary all in four days.

"By the way, who is the new Lord Mayor? No one seems to know. Any other city would have the Lord Mayor's procession on a Saturday when everyone could see it and business wouldn't be disturbed. But don't let them change it to Saturday. Hang on to your traditions. Keep both hands on the greatness of your past, for the world has got to have something enduring to crawl back to. We are living in the most brutal and destructive era since the Inquisition. Don't let England change—promise me!"—"*Atticus*" *in* "*The Sunday Times.*"

* * *

A correspondent to *The Times* recently quoted the following from an old tombstone in Harrow churchyard:—

To the Memory of Thomas Port, Son of John Port of Burton-upon-Trent, in the County of Stafford, Hat Manufacturer, who near this town had both his legs severed from his body by the *Railway Train*. With the greatest fortitude he bore a second amputation by the surgeons and died from loss of blood on August 17th, 1838, aged 33 years.

Bright rose the morn and vig'rous rose poor Port;
Gay on the *Train* he used his wonted sport;
Ere noon arrived his mangled form they bore,
With pain distorted and o'erwhelmed with gore.
When evening came to close the fatal day,
A mutilated corpse the sufferer lay.

In a subsequent issue of *The Times*, Dr. G. P. Bidder pointed out that the words "Railway Train" were carved in italics, being at that time technical terms of sufficiently recent entry into popular use "that, when necessity forced their introduction into a solemn inscription, they required the apology customary for words not belonging to the English language."

London and Birmingham Railway.

HOURS OF DEPARTURE AND TIME TABLE—ON AND AFTER THE 20th JUNE, 1839.

UP TRAINS FROM BIRMINGHAM.

Leave Liverpool & Manchester	TRAINS.	Depart from Birmingham.	Hampton.	Coventry.	Brandon.	Rugby.	Crick.	Weedon.	Blisworth.	Roade	Wolverton.	Bletchley.	Leighton.	Tring.	B. Hampstead	Boxmoor.	Watford.	Harrow.	Arrival at London.
—	MIXED, from Wolverton	—	—	—	—	—	—	—	—	—	6.45	7. 5	7.20	7.45	7.55	8. 5	8.20	8.45	9¼ a.m.
—	MIXED	6 a.m.	6.25	6.50	7. 5	7.25	7.50	8. 5	8.25	8.40	9. 0	9.20	9.35	10. 0	10 10	10.20	10.35	11. 0	11¼ a.m.
3½ a.m.	*MAIL	9½ a.m.	—	9.17	—	—	—	10.26	—	—	11.11	—	—	12.11	—	—	—	—	1½ p.m.
6 a.m.	*MIXED	12 noon.	12.25	12.50	1. 5	1.25	1.50	2. 5	2.25	2.40	3. 0	3.20	3.35	4. 0	4.10	4.20	4.35	5. 0	5½ p.m.
8½ a.m.	*MIXED, calling at 1st cl. Stations	1½ p.m.	—	2. 0	—	2.30	—	3.10	3.30	—	3.55	—	—	4.55	—	—	5.25	—	6½ p.m.
10½ a.m.	*FIRST	3½ p.m.	—	4.15	—	4.45	—	5.25	5.45	—	6.10	—	6.45	7.10	—	—	7.40	—	8½ p.m.
—	MIXED	8 p.m.	8.25	8.50	9. 5	9.25	9.50	7. 5	7.25	7.40	8. 0	8.20	8.35	9. 0	9.10	9.20	9.35	10. 0	10½ p.m.
7 p.m.	*MAIL, Mixed	12 p.m.	—	12.53	—	—	—	2. 9	—	—	2.58	—	—	4. 3	—	—	—	—	5½ a.m.

N. B. The 6½ a.m., 6 a.m., and 3½ p. m. Trains will call at the Aylesbury Junction.

SUNDAY TRAINS.

—	MIXED, from Wolverton	—	—	—	—	—	—	—	—	—	6.45	7. 5	7.20	7.45	7.55	8. 5	8.20	8.45	9¼ a.m.
3½ a.m.	*MAIL	9½ a.m.	—	9.17	—	—	—	10.26	—	—	11.11	—	—	12.11	—	—	—	—	1½ p.m.
8½ a.m.	*MIXED	1½ p.m.	1.55	2.20	2.35	2.55	3.20	3.35	3.55	4.10	4.30	4.50	5. 5	5.30	5.40	5.50	6. 5	6.30	7 p.m.
7 p.m.	*MAIL, Mixed	12 p.m.	—	12.53	—	—	—	2. 9	—	—	2.58	—	—	4. 3	—	—	—	—	5½ a.m.

N. B.—The times of the Trains conveying the mails are fixed by the Postmaster General, under the powers granted by Act of Parliament, Act 1 & 2 Vic. Cap. 98.

The Trains marked with an asterisk, are in conjunction with those of the Grand Junction Railway; sufficient time being allowed at the Birmingham Station, where refreshments are provided, and waiting rooms, with a female attendant.

[Howson, Printer, Barbican, London.] *June* 20, 1839.

Timetables of the London & Birmingham and the Grand Junction Railways dated June 20, 1839. The former is reproduced from a card in the possession of the L.M.S.R. which was exhibited at the recent centenary exhibition at Euston. The latter is from a leaf pasted in the cover of "Osbornes' map of the Grand Junction Railway," published by E. C. & W. Osborne of Birmingham, price 1s. 6d. This publication consisted of a stiff cover (4¾ in. × 3½ in.) for the waistcoat pocket, containing a folding sheet (23 in. × 13 in.) mounted on linen, which showed a view of a passenger train, a map of the system, and a gradient profile

GRAND JUNCTION RAILWAY.

THE FOLLOWING ARE THE

HOURS OF DEPARTURE,

From the 20th of June, 1839

FROM LIVERPOOL AND MANCHESTER TO BIRMINGHAM.

3 30 A.M. First, (through Mail) joins London Train at .. 8 30 A.M.
6 0 A.M. Mixed, ditto ditto ..... 12 noon.
8 15 A.M. First Class, ditto ditto ..... 1 15 P.M.
10 30 A.M. First Class, (Mail to Birmingham) ditto ..... 3 30 P.M.
4 0 P.M. Mixed
7 0 P.M. First Class, (through Mail) ..... 12 night

FROM BIRMINGHAM TO LIVERPOOL AND MANCHESTER.

2 15 A.M. First (through Mail). | 2 45 P.M. First (through Mail).
6 0 A.M. Mixed Train | 3 30 P.M. Mixed
11 30 A.M. First (Mail from Birm. | 5 0 P.M. First Class

The 3 30 A.M. Train from Liverpool starts from the Station, Edge Hill, to which place any Passenger wishing to go by this Train must proceed to take his place.

The First Class Trains from Manchester, at 3 30 A.M., 10 30 A.M., and at 7 P.M., (being Mail Trains and obliged to stop at Parkside) will not stop at Newton Bridge on and after the 20th of June, 1839.

On SUNDAYS the DEPARTURES will be—

FROM LIVERPOOL AND MANCHESTER TO BIRMINGHAM.

3 30 A.M. First, (through Mail) joins London Train at .. 8 30 A.M.
8 15 A.M. Mixed, ditto ditto ..... 1 15 P.M.
10 30 A.M. Ditto (Mail to Birmingham).
7 0 P.M. Ditto (through Mail) ditto ditto ..... 12 0 P.M.

FROM BIRMINGHAM TO LIVERPOOL AND MANCHESTER.

2 15 A.M. First (through Mail). | 11 30 A.M. mixed (Mail from Bin.)
7 30 A.M. Mixed. | 2 45 P.M. ditto (through Mail).

The Trains on Sundays stop at First Class Stations only.

By the Trains at 8 15 A.M. and 10 30 A.M. and 7 0 P.M. on Week days. and at 8 15 A.M. and 7 0 P.M. Sundays

First Class Passengers, Horses, and Carriages will, if required, be booked *throughout from Liverpool and Manchester only*, to London, (but not to any other place on the London and Birmingham Line for the present,) without change of carriage at Birmingham. A certain number only can be booked by each Train in this manner.

No Horses can be booked further than Birmingham, unless they belong to a Carriage or Passenger accompanying one of the abovementioned Trains.

Horses and Carriages should be at the Stations and booked at least a quarter of an hour before the time of departure.

A supply of Trucks and Horse Boxes will be kept at all the *principal* Stations on the Line; but to prevent disappointment, it is recommended that previous notice should be given, when practicable, at the Station where they may be required. No charge for Landing or Embarking Carriages or Horses on any part of the Line.

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

EIRE

Tourist Industry

Mr. Lemass, Minister for Industry and Commerce, in a speech at the luncheon of the Irish Tourist Association in Dublin on October 25, stressed the potentialities of the tourist industry as a factor in national economy, more particularly from the point of view of its effect on the balance of international payment, and said the State could no longer afford to rest content with the little more than passive interest hitherto taken by the Government in this field of enterprise. He stated that the facilities and amenities available at their health and tourist resorts were much below the standard of other countries; they were insufficient and to a large extent out of date.

It would appear that the annual value of this traffic was about £2,500,000, whereas the annual expenditure of the inhabitants of Eire touring abroad was estimated at £2,000,000, so that the net gain appeared to the Government to be very unsatisfactory having regard to the great attractions this country had to offer. In the matter of ordinary amenities and essential public services the resources of the country were in many instances lacking, and its expenditure was entirely inadequate.

Statutory Board to Control Industry

After referring to the increased holiday habit, encouraged by holidays with pay, Mr. Lemass said that a board would be created, with statutory powers and with substantial funds, having for its principal objects:—

The registration, grading, and certification of hotels, guest houses, and hostels;

The erection or improvement of such premises;

The construction of works for the maintenance and improvement of holiday resorts; and

Publicity work to develop tourist traffic.

The limit of the advances that might be made to the board for capital purposes would be fixed in excess of half a million pounds. An annual grant-in-aid of £40,000 or £50,000 was contemplated.

It was proposed also to empower the Minister to schedule special areas; and hotels, guest houses, and hostels in these areas would be subject to the provisions of the Act, and a certificate of registration, subject to such conditions as might appear to be necessary, would be issued to boarding houses, restaurants, dance halls, cinemas, theatres, and also local transport. The object in view was to combat the danger of the amenities of a district being spoiled by the erection of inferior establishments, and to prohibit exorbitant charges. It was intended that the board should take over the publicity work of the Irish Tourist Association. The Tourist Association would confine itself to non-commercial activities, as it was not a body equipped for commercial enterprise.

SOUTH AFRICA

Housing Scheme

The first £1,000,000 voted by Parliament for the railway housing scheme —referred to in THE RAILWAY GAZETTE of March 25 last—to enable railwaymen to purchase their own houses has now been allocated. Out of 3,384 applications for loans aggregating £3,451,698, one thousand were successful. As far as possible allocations have been made to each system proportionately to the number of applications received. The bulk of the loans have been granted to the larger centres of the Transvaal, Cape, and Natal provinces. No further grants will be made until next year when another £1,000,000 will be provided.

Tourist Development Corporation

Under an Act passed at the recent session of Parliament, provision is made for the establishment of a Tourist Development Corporation—already referred to in THE RAILWAY GAZETTE of May 5, 1937, and May 13, 1938—to encourage tourists to visit Southern Africa. The corporation will be established when persons or communities have given satisfactory undertakings to contribute to its funds immediately after the beginning of each of the five consecutive years following its establishment, these contributions to be in the aggregate not less than £12,500 in respect of each such year. There will be a board of control consisting of six members, two being appointed without nomination—one of whom will represent the railways—and four to be appointed from persons nominated by the contributors and the South African Publicity Advisory Committee.

To enable the board to perform its function and to meet the liabilities of the corporation, funds will be appropriated by Parliament each year equal to three times as much as was, in that year, contributed to the corporation from all other sources but not exceeding £75,000. Of this amount one-third will be paid out of the Consolidated Revenue Fund and two-thirds out of the Railways and Harbours Fund.

Tourism in Africa

The first international congress of African tourism, held at Costermansville in the Belgian Congo, has agreed upon a plan to open up Africa to tourists by road, rail, ship, and air and has decided to create an African section of the Alliance Internationale de Tourisme; a committee has also been appointed. The congress further agreed that the main routes in Africa should be through the Belgian Congo to Algiers or, alternatively, *via* Nairobi to Egypt or Algiers. The next congress will be held in Algiers in 1940.

WESTERN AUSTRALIA

Fat Lamb Traffic

The fat lamb export trade has come into considerable prominence of late as one of the major State industries, and the Railway Department has been called upon at certain rush periods to strain its resources to the utmost in supplying trucks for the transport of lambs to the freezing works. At times the supply of ordinary livestock trucks has been insufficient to meet all requirements, and to ensure that all demands should be met, open trucks have been withdrawn from other traffic and placed in the lamb traffic. As these open trucks are of steel they have been fitted with temporary wooden floor gratings to prevent slipping. Meanwhile, additional sheep trucks of the latest type are being built as funds permit. Special cool storage vans have also been constructed for conveyance of the carcases from freezing works to ship.

With a view to educating those engaged in the handling and export of lambs as to the necessity for the more careful treatment of the animals to ensure the best results, a publicity campaign has been inaugurated to draw attention to those defects which are most common in the finished carcase and the means by which they can be avoided.

DENMARK

Train Service Notes

The International Sleeping Car Company has recently placed a dining car in the day express services between Copenhagen and Gedser. This vehicle is of all-steel construction, seats 41 passengers, and weighs 52 tons; it was built in 1926 in Leeds and has latterly seen service on through trains between Germany and Hungary *via* Czechoslovakia. It is the only vehicle regularly in use on steam-hauled trains on the State Railways not fitted with the vacuum brake or vacuum-pipe. All foreign passenger stock running regularly on the Danish State Railways is fitted with both vacuum and compressed-air brakes.

The winter timetables show no alterations in the fastest runs in the country, except that the three runs by the relief Lyntog between Copenhagen and Fredericia have dropped out, as these two trains run only in the summer months. Next summer through coaches will be run on one of the day expresses between Copenhagen and Stockholm from Copenhagen *via*

Gothenberg and from Stockholm *via* Malmö; at the moment the only through vehicles between these cities are sleeping cars.

Improvements in East Jutland

The doubling of the Aarhus—Randers section of the East Jutland main line is now complete, and the Padborg—Tinglev section of the same line has been converted to single line. Between Aarhus and Randers, and also south of Aarhus, several intermediate stations have been completely remodelled, chiefly in order to remove speed restrictions to 90 or 100 km.p.h.; in more than one case the overtaking siding has been moved from outside the running tracks to between them, thus reducing conflicting movements. Opportunity has also been taken to introduce three-aspect colour-light distant signals 800 m. (875 yd.) ahead of the home signals instead of the usual two-aspect semaphore distants only 400 m. ahead. Three-aspect distants will gradually be introduced at all stations on routes traversed by Lyntog.

Fitting of Air Brakes

Work on the introduction of the Hildebrandt-Knorr compressed-air brake is continuing steadily, and a number of goods wagons have now been piped. Three of the three-cylinder 4-6-0s of class "R" have been fitted with air-brakes and now take turns with the ex-Swedish Pacifics (class "E") in working the Copenhagen—Gedser expresses with through stock to or from Germany; these trains are still the only steam-hauled passenger trains on the State Railways worked with compressed-air brakes.

Permanent Way

Old main-line rails are now systematically shortened and relaid on secondary lines, but an unusual case is that of the new southbound track from Randers to Stevnstrup, on the East Jutland main line; this track is laid with 28-m. (92-ft.) rails formed by welding together two old 15-m. rails with ½ m. cut off from each end; the rails in question come from the abandoned single-track between the same two stations. It may be remembered that a new section of line was built here in order to eliminate reversal of all trains at Randers.

CHINA

Heroism of Railway Staff

Vivid accounts of heroic deeds performed by the staff of the Canton—Hankow Railway have been received from time to time. Among those not already recorded in THE RAILWAY GAZETTE are the following, which are vouched for on excellent authority as accurate.

During the 11 months from August, 1937, to July last, nearly 5,000 bombs were dropped by the Japanese air raiders on the Canton—Hankow Railway, but only a small percentage of the missiles found their objectives. The bravery and efficiency of the staff along the 1,096 km. of track practically negatived the attempts to put the line out of action. To commemorate the bravery and self-sacrificing spirit displayed by the workers in maintaining traffic, the railway administration is erecting a marble memorial at Wuchang station, the railhead on the south bank of the Yangtze river.* Some of the deeds that this memorial will commemorate are the following:—

On October 10, 1937, when the enemy planes were bombing the Lo Ho bridge, a military train carrying troops and supplies was approaching; the rails near the bridge-head were damaged by one of the bombs. Disregarding the danger, the guard of the bridge, Meng Chi-kwei, rushed out and waved a red flag. He was seen by one of the low-flying enemy pilots who swooped down and machine-gunned the luckless man. But before he expired, the guard managed to plant the flag in the road bed and stop the train.

Another case of heroism occurred near Wuchang station on June 26. During a raid an oil-tank wagon was hit, and the flames endangered the trains on other tracks. The locomotive men and four of the yard workers dashed out from their dug-out, managed to uncouple the tank wagon and the adjoining freight car from the rest of the train, attached a steel rope to the freight car and with the locomotive pulled the burning vehicle away to a spot where the fire could burn out harmlessly. All this took place when the enemy planes were power-diving overhead and raining missiles on the station yard.

Reported China-Soviet Railway Construction

It is reported, on what is usually good authority, that arrangements have been made between the Chinese and U.S.S.R. Governments for the construction of a railway from Paochi, the present western terminus of the Lung-Hai Railway, and Hauiel in Turkestan. Work is said to have already begun between Lanchow and Pingfau, as the formation had previously been completed from Paochi to Lanchow, but the whole line is not expected to be opened for another three years. Tree-felling in the Kansu forests is in hand to provide sleepers for the new line. Supervision of all work is in the hands of Soviet engineers.

SPAIN

Industrial Accident Insurance

Fines have been imposed by the Burgos Government on a number of mutual insurance corporations for failure to comply with the provisions of the Decree relating to industrial accidents. Among others the Madrid, Zaragossa & Alicante Railway Company is fined 15,000 pesetas (£357) for "frequent non-compliance with the rules regarding payment of compensation."

* Written prior to the Japanese capture of Wuchang.—ED. *R.G.*

TASMANIA

Coal Strike

For the second time this year the collieries are idle on account of a coal miners' strike. Such stoppages, in addition to the inconvenience and loss imposed upon the community, involve serious loss of railway revenue. The shortage of coal for locomotives is being met by the use of large quantities of firewood and the combined wood and coal fires are giving quite satisfactory service.

Locomotives

For many years past it has been the practice when new locomotives were required, to obtain them from Australian makers. There is still, however, a considerable proportion of engines in use which were built by British manufacturers, particularly Beyer, Peacock & Co. Ltd. of Manchester, in the early days of the railways. Many of these engines after upwards to 40 years' constant use are still rendering good service and will continue to do so for some years to come.

Launceston Workshops

Owing to their being more centrally situated from a railway point of view than if they had been built at the capital, Hobart, the railway workshops were established at Launceston in the North. During the last two or three years extensive alterations have taken place in the organisation of the shops, many up-to-date machines have been installed and the whole organisation has been brought more into line with modern practice.

Main Line Deviation

Of recent years two important deviations of the main line between Hobart and Launceston have been carried out, resulting in greatly improved running conditions, particularly in the case of heavy goods trains. So successful have these deviations proved that a more ambitious scheme has now been projected, involving a detour of 28 miles of new line. The proposal is to leave the present main line at Brighton junction, run over the Apsley line for a short distance, and then by striking through country which has not been very extensively settled, join up again with the main line at Stonor after skirting the western and northern sides of Lake Tiberias. A detailed survey has been made of the alignment but it is probable that financial stringency will prevent the work being put in hand in the near future. The effect of the deviation by reducing grades and eliminating sharp curves would be to reduce the running time of the passenger trains between Hobart and Launceston by approximately 30 min.

KILSBY TUNNEL DRAINAGE

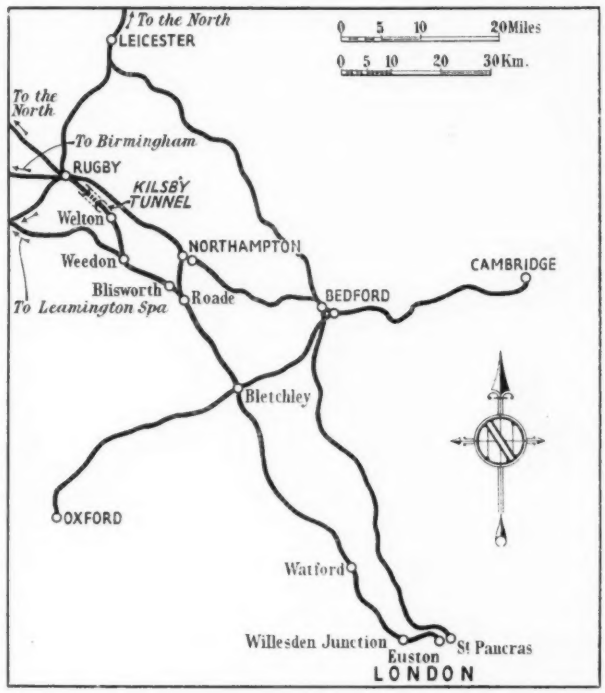
Reconstruction of the culvert through the tunnel, which is being carried out on winter Sundays

THE recent centenary celebrations of the London & Birmingham Railway have directed public attention to the famous Kilsby tunnel, and it is interesting to note that the London Midland & Scottish Railway is now engaged in reconstructing the original drainage culvert through the tunnel, which has a length of 1 mile 666 yards and falls from south to north at a gradient of 1 in 850. It will be remembered that the construction of this tunnel involved the railway company in very considerable unforeseen expense owing to the tapping during construction of enormous volumes of water accumulated in the overlying strata. In consequence, the workings were flooded and operations had to be suspended for many months until special pumps had been designed and erected capable of dealing with the flow of water into the headings.

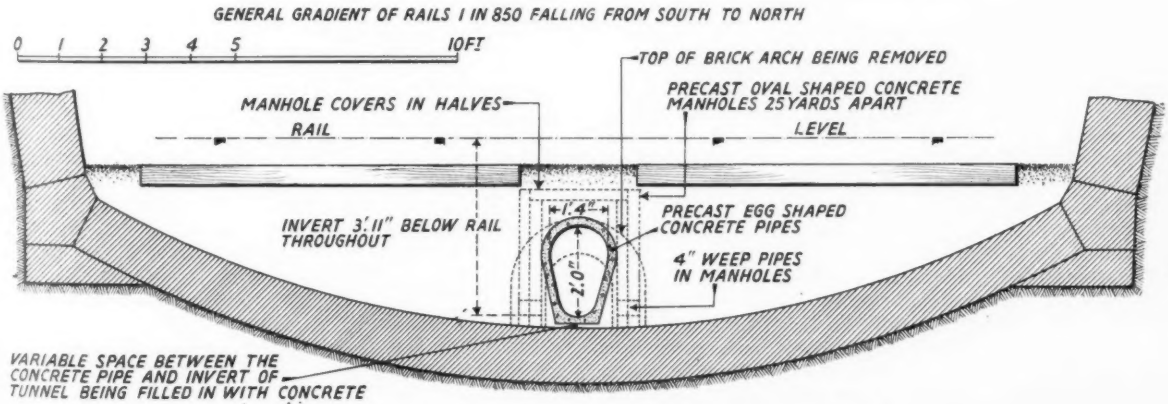
In order to ensure the stability of the tunnel lining, it was found necessary to construct the tunnel throughout with a brick inverted arch under the permanent way, and upon this invert to build a central drainage culvert with brick side walls and arch to collect and convey the water percolating into the tunnel. Owing, no doubt, to the difficulties originally experienced in carrying out the work, the gradient of the tunnel invert has been found to be very irregular, with the result that the drainage culvert has for many years given trouble owing to sediment collecting at the low points. Also, in the course of years, the brickwork of the culvert deteriorated, with the result that the railway company has been compelled to take in hand its entire reconstruction.

As the engineers could be given occupation of the tunnel only on Sundays, and then only in the winter period, it was essential to remove the old brickwork and substitute a completed section of the new concrete culvert every Sunday, leaving the length dealt with ready for traffic without speed restriction. The first half of the work was completed during the winter months of last year and it is hoped to complete the remainder by the early part of next year. The work involves the employment of a gang of 80 men every Sunday and will entail a total expenditure of £13,300.

The operations on a Sunday consist of breaking up and removing the old brick culvert, levelling up the tunnel invert with concrete to give a correct gradient, and fixing precast concrete egg-shaped tubes 24 in. deep, with a maximum width of 21 in., together with precast concrete manholes at intervals of 25 yd. These tubes, when placed in position, are surrounded with a concrete backing; the ballast is restored; and the roads are packed ready for traffic. As an additional precaution, "hanging rails" are bolted to the sleepers throughout the length affected, in order to distribute the pressure and increase the stability of the running lines.



Sketch map showing position of Kilsby tunnel



Cross section showing reconstruction of tunnel drainage culvert

NEW TRAIN INDICATOR IN BUENOS AIRES

A modern installation of the Buenos Ayres Great Southern Railway at Plaza Constitución terminal station

(*See illustrations on opposite page*)

THE Buenos Ayres Great Southern Railway, in pursuance of its usual progressive policy, has recently installed in the concourse of the Plaza Constitución terminus, Buenos Aires, a new train indicator, which is one of the largest of its kind. The company having improved suburban services and reduced fares to combat increasing road competition, it was consistent with its policy of attracting traffic to provide the travelling public with the most complete information possible regarding train departures. How this object has been achieved can be seen in the accompanying illustration of the indicator, whereon all stations and combinations of the suburban area can be indicated as far as Altamirano, Cañuelas, Ranelagh, La Plata and branches, forming altogether 66 stations. The indicator is constructed of light steel framing and sheet metal lining, painted olive green; the metal slats are dark brown and all inscriptions are in gold. It is 28 ft. high and 27 ft. wide, and was designed and carried out by the company's way and works department.

The suburban district served by this railway has increased considerably during the past ten years, and today has a population reaching 700,000 inhabitants. This district is both industrial and residential; consequently, the passenger movement at Plaza Constitución station is large, averaging some 150,000 persons daily, carried by 482 arrival and departure trains; the peak hour is between 6 p.m. and 7 p.m., when some 9,000 passengers depart.

In order to announce all suburban departures with an adequate time-margin, according to the Government requirements, five panels were necessary, both for the section *via* Quilmes and that *via* Temperley. The system of operation is simple and entirely mechanical. All slats are of hardwood lined with metal, triangular in shape, on one side of which only is painted a station name. These slats turn in accordance with the disposition and perforations of key plates corresponding to every suburban departure. The plates, on being inserted in their appropriate slots, are raised or lowered by means of a handle, thus operating simultaneously the slats indicating the station stops. In the event of derailment or other unforeseen dislocation of service, special plates are provided, which can be made up to form any particular combination of station stops.

The departures of the long-distance trains serving the extensive territory of the Province of Buenos Aires occupy the centre portion of the indicator. The announcements are made by metal plates, suspended on rods, the assembling of which is done behind the indicator, and by rotating an endless chain the plates are brought into view. A system has been devised in which every train announcement is formed by plates painted a distinctive colour. Provision has also been made for an information bureau with counter for use of the public. The work was supervised by Mr. R. J. Buck, L.R.I.B.A., Architect of the Chief Engineer's Department.

An Unique G.W.R. Carting Agency

The ancient town of Wantage, in Berkshire, is some 2½ miles from the G.W.R. Wantage Road station, and its passenger traffic is catered for by the City of Oxford Motor Services Limited—one of the G.W.R. bus associates. The town has its direct rail link, however, by means of the single standard-gauge line of the Wantage Tramway Company which runs mainly alongside the highway and partly on enclosed track. It has a physical connection with a G.W.R. siding at Wantage Road station. The inception of this tramway (in effect a steam-operated light railway) goes back to October 22, 1873, when a local meeting in Wantage Town Hall decided to take steps to launch the undertaking. Powers were secured in 1874, and the line was opened on October 11, 1875.

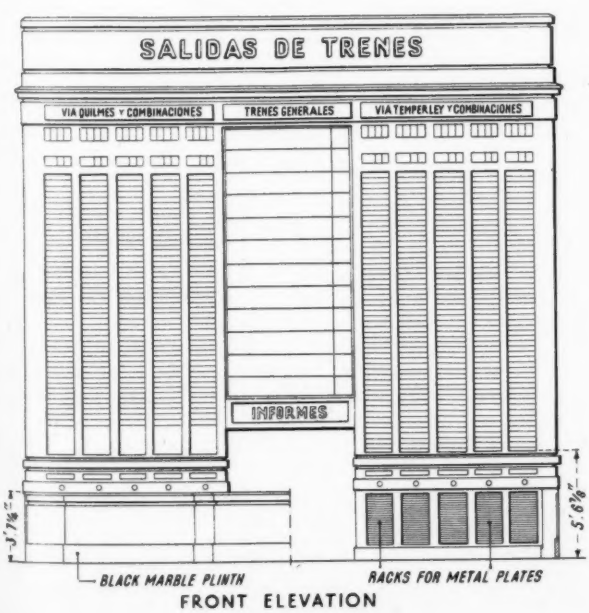
Both passenger and goods services between Wantage and Wantage Road station were maintained until August 1, 1925, on which date a G.W.R. bus service replaced the rail passenger and mail facilities. This bus route was transferred to the associated City of Oxford Motor Services Limited on April 4, 1932. The Wantage Tramway Company still hauls mineral and goods traffic with its own locomotives and acts as agent for the G.W.R. Traffic is booked by G.W.R. to Wantage Road station at the rates applicable, and a scale of supplementary charges is levied by the tramway company; on carriage-paid inwards traffic and carriage-forward outwards traffic such items are collected by the railway on behalf of the tramway. For ordinary collected-and-delivered railway traffic, the Wantage town tramway depot, and not Wantage Road, G.W.R. station, is considered the terminal point, and there is a free collection and delivery area radiating from the town depot. The lorry services are operated by the tramway company. The tramway locomotives work three trips daily between Wantage and Wantage Road station to haul trucks of goods and minerals.

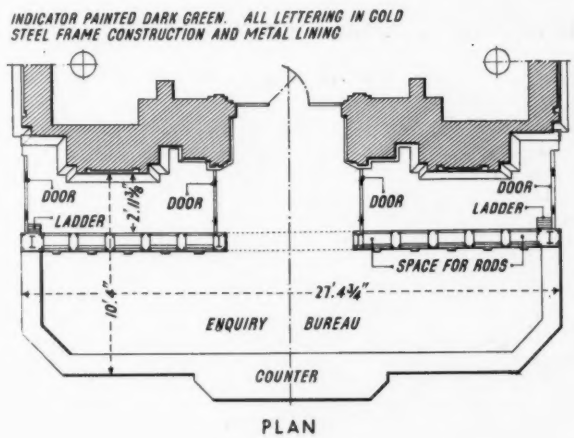
An Improved Excavator

Improvements recently carried out in the well-known Smith Two-Ten excavator, made by Thomas Smith & Sons (Rodley) Ltd., Leeds, have increased the capabilities of this machine. Instead of being a sectionalised structure the frame has now been converted into an all-welded one-piece steel unit constituting a stronger foundation. Upon this the superstructure of the excavator, which is fully revolving, rotates on a live ring of twelve tapered rollers. Further, in the new model the barrel clutches have been improved to give easier and more reliable operation. The engine—diesel, petrol-paraffin or electric motor—has been placed further back on the platform, giving extra counterbalance weight and allowing greater accessibility for adjustment and lubrication. Power for slewing and travelling is smoothly transmitted by oversize flat plate friction clutches and machine cut bevel gears.

The Smith Two-Ten can be utilised as a navvy shovel, back-acting trencher, dragline, grab crane, crane or pile driver, the conversion from one function to another being rapidly effected by change of jib and buckets. Only two types of jib and three buckets are required for all these functions.

General view of the new train indicator at the Plaza Constitución (Buenos Aires) terminal station of the Buenos Ayres Great Southern Railway





Principal dimensions and general arrangement of the new train indicator (see article opposite)

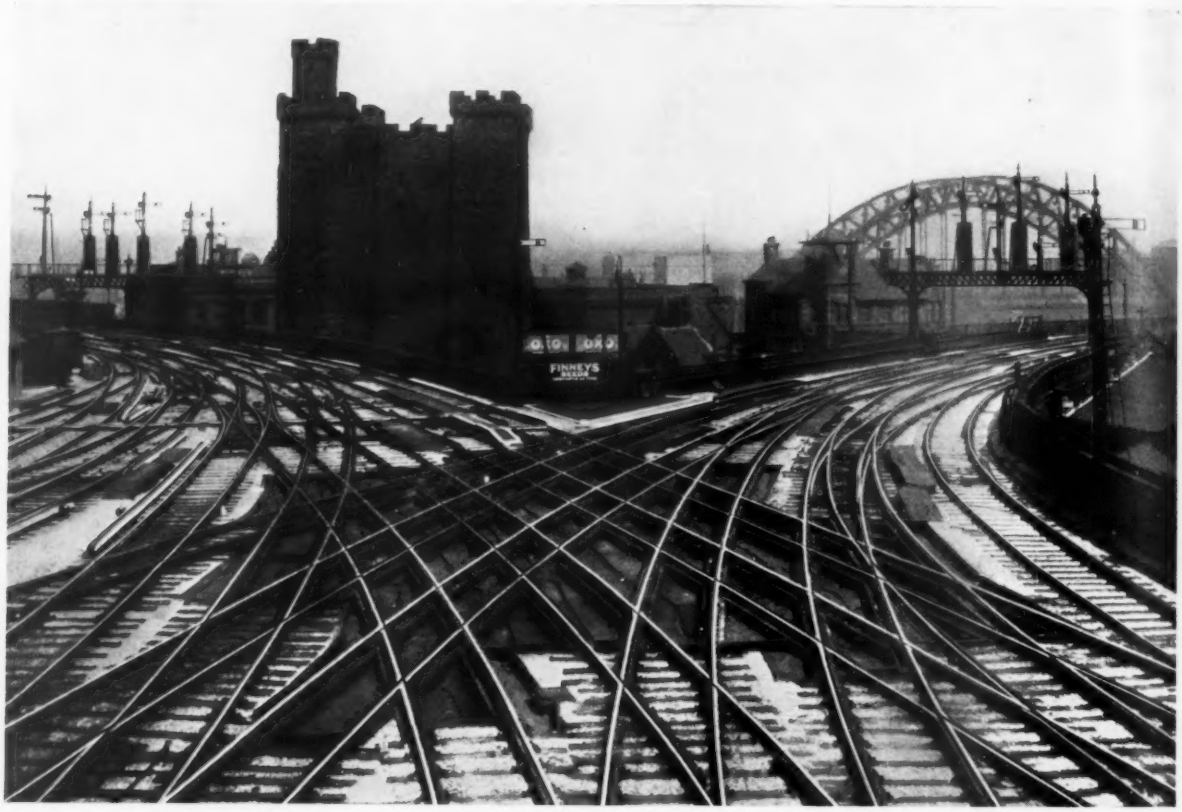
NEW MANGANESE JUNCTION AT NEWCASTLE, L.N.E.R.

The complicated junction at the east end of Newcastle Central station has just been renewed again in Era manganese steel

THE junction at the east end of the Central station, Newcastle-on-Tyne, probably the largest concentrated piece of manganese steel special trackwork in the world, has recently been renewed in Hadfield's Era manganese steel. Comprising no fewer than 92 solid cast crossings and rails, it weighs over 70 tons and is the third similar layout in this junction. The first was installed in 1912, and the second in 1924, the latter thus having given a life of 14 years, a remarkably good performance having regard to the exceptionally heavy traffic carried. This traffic includes large freight tonnages, as well as both electric and steam passenger trains, and, as our illustration shows, the conditions are extremely onerous because of the curvature of the lines in both directions. Many of the joints are insulated for track circuiting necessitating special care in the fitting and assembly of the layout, the total length of which is 140 ft. and the width 58 ft. 6 in.

Among advantages claimed for the solid cast manganese type of crossing may be mentioned the reduction of maintenance charges and adjustment as a result of the absence of loose parts in the single castings. Once laid, such castings cannot get out of alignment; the wing rails being incorporated in the casting the crossing is easily and quickly installed by bolting down to the timbers.

An interesting feature of this layout is the ramping of the flangeways so that the flanges of wheels are supported at the crossings which are thus protected from hammering. The floor of the flange groove is gradually raised at each side of the intersection in such a manner that at the actual point of intersection there is no drop. In some nests of crossings the groove is continuously raised right through to the outer ends where it is gradually ramped back to normal.



General view of the manganese steel junction at Newcastle-on-Tyne, L.N.E.R.

A LIGHT-WEIGHT LORRY.—The possibilities of high-tensile steel in saving weight and money in road vehicle practice has been well demonstrated by the North Western Electric Company in the U.S.A., which has just acquired a line repair vehicle built principally of Cor-Ten chrome-nickel molybdenum steel. The complete van with Cor-Ten steel body weighs 9,060 lb. and cost $3,980; it has replaced a van taring 11,050 lb. which cost $6,439. The body itself weighs 1,958 lb., and it is to the lighter chassis which this low body weight permits that most of the 38 per cent. saving in tare weight is due. Although this lighter weight was desirable partly on account of taxation, there are big savings due to the lower first cost, and it is estimated that over a life of ten years a total of $2,460 will have been saved in interest and licensing charges, although at the same time the carrying capacity for a given gross weight has been increased by 2,000 lb.

ROAD TRANSPORT SECTION

This section appears at four-weekly intervals

Red Rear Reflectors

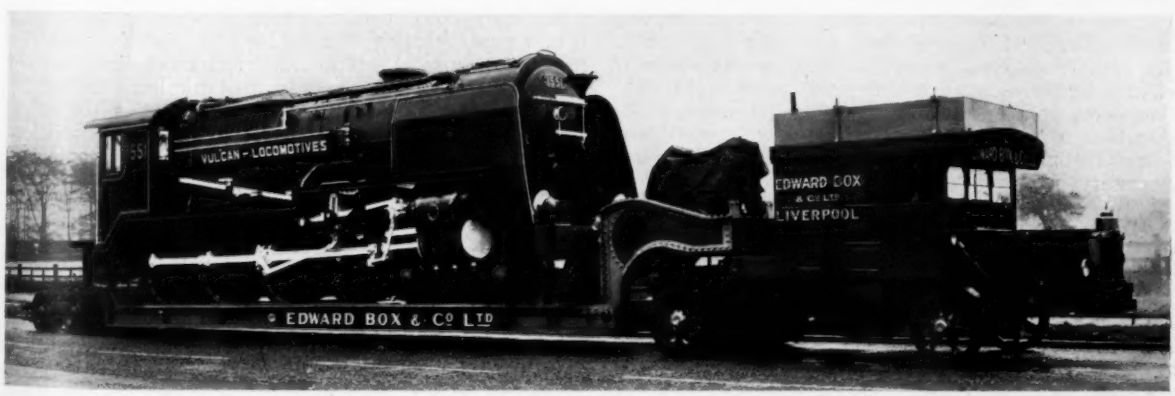
WHEN a collision occurs at night between a moving vehicle and a stationary vehicle, it is frequently suggested that the rear light of the stationary vehicle had either failed or been obscured. Accordingly, the Minister of Transport recently consulted a number of representative organisations on a proposal that motor vehicles should be required to have a red rear reflector in addition to the red rear light. We understand that, while many of the replies express approval of the proposal or suggest extension of its scope, others would limit its scope or reject it entirely, especially in the cases of buses and coaches, which are well lit internally, and of private cars, whose coachwork and fittings, if well maintained, afford appreciable reflection. Some organisations suggest that this type of accident would be prevented by the provision of roadside bays, but, although these would undoubtedly prove of considerable traffic value, they would not completely solve the collision problem as the stationary vehicle is not infrequently one which has broken down on the road and cannot be moved without tackle. The Minister's examination of the question has already led some road-users voluntarily to fit reflectors, a measure which is likely to conduce to the greater safety of their own and other vehicles. Legislation would be necessary before the Minister could make regulations on the lines suggested; and we are officially informed that, when occasion arises for legislation on kindred subjects, this question will again be reviewed in the light of the information in the possession of the Ministry of Transport.

Traffic Lights in Hanover

AN article in the *Siemens Zeitschrift* gives some interesting particulars of the traffic light installation brought into use in Hanover on October 20 of last year at the important junction of five streets near the Kröpcke café, where traffic conditions are somewhat involved. There are trams in all the streets, but, except for them, the traffic is of the one way type in several cases, with prohibition of certain turning movements. The streets are not narrow, but dense traffic at times makes visibility difficult. The apparatus is constructed on the traffic registering principle with road pad contact-makers and special contacts for operation by the bow collectors on the trams. For certain movements the tram conductor has to operate a hand plunger button. As it is difficult to motor drivers and others—especially when they are unacquainted with the tram service signs and numbers—to know whether a tram is going to make a turning movement, special flashing traffic lights at two street corners are put in action by the tram points being set for the turnout. A similar installation in Oldenburg is reported to have given every satisfaction.

P's and Q's

A FURTHER stage in the regimentation of London bus passengers was reached on October 28 when *The London Gazette* of that date published an announcement of the London Passenger Transport Board, that the board had made byelaws requiring intending passengers to wait in "lines or queues." This step was not unexpected, as Section 69 of the London Passenger Transport Act of July 20, 1937, authorised the board to make byelaws requiring persons to wait in queues and to enter road vehicles in the order in which they stood in such line or queue. Under this section the board has now issued the appropriate byelaws, which come into force on January 1 next. In brief they require that when six or more passengers are waiting at a stopping place or terminus at which (*a*) a notice is exhibited requiring passengers to form a queue, and/or (*b*) an authorised employee of the board requires them to form a queue, a passenger shall not wait otherwise than in the manner directed. He is required so to place himself that waiting passengers are not more than two abreast; to take his place only at the rear of the queue; and not attempt to enter a vehicle excepting in the order determined by his position. Two limitations are provided, one by the byelaws, and the other by the Act under which they are made. Byelaw No. 4 says that nothing in these byelaws shall diminish or in any way affect any powers possessed by a police officer whether for maintaining order, preventing obstruction, or otherwise. Section 69 of the Act provides that proceedings in respect of an offence created by any byelaw made under the provisions of that section shall not



One of the 4-8-0 type locomotives built by the Vulcan Foundry Limited for the Buenos Ayres Great Southern Railway in transit by road to the docks at Liverpool

without the written consent of the Attorney-General be taken by any person other than a party aggrieved or by the board. Byelaw No. 3 stipulates that a person offending against the regulations shall be liable on summary conviction to a fine not exceeding forty shillings. From the beginning of next year, therefore, it behoves the intending London bus passenger to mind both his (P)enalties and (Q)ueues.

Education for Road Transport Employees

THE special committee formed in 1935 to consider the question of the education of persons engaged in the road transport industry, prepared a scheme to cover a three-year course of study. The committee was formed of representatives of the road transport operators, the Institute of Transport, and the universities and technical colleges; and the Royal Society of Arts consented to hold examinations and to issue certificates to successful examinees. The regulations and syllabuses for 1939 have just been issued and may be obtained from the Education Committee of the London County Council or from the educational authority in other cities. There are centres for the Society of Arts examinations in most towns. The course of study has been designed to enable transport employees to gain a knowledge of road transport in both its immediate and in its wider aspects. All the members of the staff of road transport undertakings, passenger and goods, in whatever capacity they may be engaged, are entitled to sit for the examinations, and all the students who complete the course successfully are awarded the Diploma in Road Transport, as well as the appropriate group or single-subject certificate. The course of study is arranged in three groups, each made up of three subjects. Each group is designed to form a one-year course, so that normally the whole course should occupy three years. The syllabus has been planned in this form (each group being a preparation for the succeeding one) in order that the candidate may gain the fullest understanding of transport principles and methods. The value of this scheme of education is self-evident, and its growing importance is demonstrated by the fact that in 1938 there were 1,307 entries for the examinations.

British Trunk Roads

SINCE the Minister of Transport became the highway authority for 4,500 miles of the principal roads of this country, the survey of the whole length of the thirty trunk roads concerned has been completed. Maps have been prepared on a scale of six inches to one mile showing existing conditions and in general how improvement can be carried out. In a recent statement, Dr. Leslie Burgin, the Minister of Transport, said that these improvements will be designed to meet the present and prospective traffic needs of the roads at different points, and will provide wherever necessary for the segregation of the various types of traffic. A long-term policy is being drawn up for every road, and, where the configuration of the country permits, the existing alignment will be preserved, though of course unnecessary bends will be straightened out. It appears, however, that many minor diversions will be necessary as well as by-passes to centres of population. In these cases a new line of route may be prescribed by an Order under Section 1 (3) of the Trunk Roads Act. The making of these Orders is being pushed ahead as quickly as possible, partly to safeguard the new line against development. In the year 1937-38 notices of 76 such Orders were published. In the six months since then 103 more have been added to the list, making a total of 184. In 82 cases, the Orders have now been sealed and the route is protected from building development and from the formation of new means of access. From this long-term policy, said Dr. Burgin, the annual programme of works is chosen to accord with the more urgent traffic needs.

When the trunk roads were transferred to the Minister of Transport, County Councils had in various stages of preparation schemes estimated to cost about £4½ million for completion, but only in a small minority of cases had the work been put in hand, and in the majority the necessary land had not been secured. These schemes have been continued and in many cases expanded. In 1937-38 additional schemes estimated to cost a further £4½ million were added to the list of commitments and this year the Minister's estimates provide for the addition of a further £10 million. In all these cases the necessary land is being acquired as rapidly as possible. Land acquisition is a lengthy process, for in some schemes there are as many as 150 interests to a mile of road. A year ago the Ministry of Transport was in process of acquiring 3,000 interests, mostly (but not all) for schemes transferred on April 1, 1937. Last month the figure had risen to over 12,000, and in the meantime nearly 1,000 acquisitions have been completed. It may be added that there are 178,000 miles of roadway, of which 15 per cent. are Class 1 roads, 10 per cent. are Class 2 roads, and 75 per cent. are unclassified. The annual ordinary maintenance amounts to £32 million.

South African Road Transport

THE seventh annual report is to hand of the Central Road Transportation Board, constituted under the Motor Carrier Transportation Act of South Africa, of 1930. The period covered by the Report is from April 1, 1937, to March 31, 1938. The board reports with regret the death of Mr. A. F. J. Benning, one of the original members, and records the appointment of Lt.-Colonel L. Strickland to fill the vacancy. The headquarters of the central board are at Pretoria, but there are ten local boards functioning in the ten transportation areas fixed by the Act. Summaries are given of the reports of the local boards. The development of motor transport in South Africa is described in a special section of the report, in which the question is divided under three heads, railway, municipal, and private. The railway administration is expanding its already extensive road motor services, which now play an important part as feeders and in opening up the country. Besides the 844 vehicles already certificated (559 motors and 285 trailers), the railway administration had 200 new road vehicles under construction. In 1937 some 4,796,855 passengers and 593,822 tons of goods were carried by the railway road service, besides 1,305,265 gallons of milk and cream. The administration is now experimenting with double and triple-deck vehicles for sheep transport. Since 1932 temporary licences have been issued for the conveyance of furniture (household removals) by road for distances not exceeding 100 miles, but, while it is apparent that this class of traffic is lost to the railways, the board hopes that the use of containers by the railway administration may perhaps be the means of regaining some of it.

Under the head of municipal motor transport, the trend is noted towards supersession of trams by trolleybuses and petrol or diesel buses. Particulars are given of the number of vehicles of each class in the different areas. As regards private motor transport, development may best be shown by the increase in the total of licences issued and the traffic carried. In 1937 the number of licences issued was 6,879, as compared with 5,940 in 1936; while 21,647 exemptions were granted, against 18,750 in the

previous period. Passengers carried totalled 98,094,995, as against 88,807,887. The tonnage of goods was 2,477,278, compared with 1,748,584 tons in 1936. In 1932, only 46,712,975 passengers were carried, according to the records available, and only 498,240 tons of goods. These figures include the traffic, already quoted, carried by the vehicles of the railway administration, but not that of the municipal areas. As an example of the regulations imposed and carried out by the board, the report quotes the development of the passenger transport industry in the Cape Peninsula. The wasteful competition and duplication of services are illustrated by the fact that whilst in 1931, 129 buses were required to convey 18½ million passengers, doing on an average 3,258 trips per diem, at present 67 buses doing 850 trips per diem convey 20½ million passengers. Certain buses are co-ordinated as feeders and in this way approximately 6¼ million passengers are carried to suburban railway stations. Combined monthly rail and bus fares are cheaper than the through bus fares. At the same time, the increased stability in the industry since on the elimination of inter-bus competition has enabled the operators to replace the old single-deck buses by modern double-deckers. On the other hand it is found difficult to control competition by taxis operating virtually as buses. The board approved the proposal of the railway administration to institute a road motor service between Matatiele and Maclear. During the period 35 appeals were lodged, nine of which were presented by the railway administration. Summaries of the most interesting of the appeals, and the corresponding findings, are quoted in the report, and show how closely the co-ordination is watched and regulated.

Progress of the German Motor Roads

ON Saturday, November 5, five new sections of the great system of *Reichsautobahnen* were opened to traffic, and two of them completed the finest and longest motor road in Europe. This is the north—south route from Stettin, *via* Berlin, Leipzig, Nuremberg, Ingolstadt, and Munich, to Salzburg. It links the Baltic with the Austrian Alps, and is over 500 miles long. By the end of the present year it is hoped to bring the total of these national motor roads up to 2,000 miles. Recently Dr. Leslie Burgin, the British Minister of Transport, said that the German motor roads had excited the admiration —and fired the imagination—of all who had seen them. We have covered many hundreds of miles over these roads in various parts of Germany, and there can be no doubt that they afford first-rate opportunities for long-distance motor traffic to move fast and with a great measure of safety.

It would be ill-advised, however, to assume that what may be suitable in Germany will necessarily be the best method of achieving an object in Great Britain. The geographic and economic differences between the two countries are wide; there is a vast difference in the distribution of population, in the distances and kind of country between main centres of population, and in the standard and effectiveness of existing communications. For a variety of reasons, geographical as well as social, the cost per mile of constructing a motor road in this country would be considerably greater than in Germany; more bridges would be necessary, land would be dearer, and labour conditions are different. Incidentally, the limitation of user of a road to one particular type of traffic would be a novelty in this country and would require legislation. Dr. Burgin has pointed out that the question cannot be determined on *a priori* grounds and by reference to vague generalities, but calls for detailed examination of the traffic, financial, and engineering aspects.

The report of the *Reichsautobahnen* for 1937 shows that 927 km. (576 miles) of new roads were opened to the public, making a total of 2,014 km. (1,251 miles) open at the end of last year; about 24,941,740 working days were involved in construction during the twelve months. Early in the present year Herr Saurler, in charge of the Munich constructional office, gave some details of work being carried out in that district. The road from Munich to the former Austro-German frontier near Salzburg was then practically complete, and work was in hand on the Ingolstadt section of the Berlin-Munich *Autobahn*, construction was also being strongly pushed forward on the Munich—Ulm road expected to be complete at the end of this year. Materials have had to be fetched from other parts of Germany, as local supplies were inadequate. The Regensburg road, which leaves the Augsburg road at Pasing, will cross the road to Ingolstadt at Wolznach and join the Nuremberg—Passau road at Regensburg. So far little more than preliminary surveying has been done for the last mentioned route, which will leave the Munich district at Kallmunz and cross the Danube near Wörth. From Kallmunz to Passau is 157 km. (97·5) miles, work has also been begun on the Munich to Lindau (Lake Constance) road. The 57 km. (35·4 miles) *Ring* or circular road round Munich is also in hand but is expected to be somewhat difficult to make.

It is stated that the means adopted for financing the work proved satisfactory in 1937. The so-called operating account showed an excess of expenditure over receipts of 4,112,346 RM., which has been met from money derived from certain taxes and excise duties allocated to the purpose. Receipts, mainly derived from petrol filling stations, came to 295,000 RM. against 55,000 RM. in 1936. Interest payments demanded 34,200,000 RM. against 8,500,000 RM. in 1936 and placing loans at discount required 13,200,000 RM. Capital expenditure came to about 703 million RM., making the total to the end of 1937 from the beginning of the work of about 2,109,660,000 RM., the estimated value of the concern at that date. The chief items of expenditure in 1937 were:—

	Millions RM.
Excavation work	200
Road surface material	144
Embankments	92
Bridges	72
Administration	52
Staff welfare	32
Purchase of land	26
Interest on building credits	23

In the profit and loss account appear 295,753 RM. brought forward, with 197,092,584 RM. receipts from taxation, chiefly on oil fuel, and lorry and bus taxes. The total credit figure is 197,388,337 RM. On the other side appear the loss on operating, given above, with 34,200,000 RM. interest charges on capital cost of sections open, 13,236,800 RM. loan charges and 145,000,000 RM. depreciation charges, leaving a favourable balance of 839,190 RM. Liabilities in the balance sheet include capital of 50 million RM. and 195 million RM. reserves, credits in the form of acceptances at 450 million RM. and a loan from the State Railway of 400 million RM. New loans were taken up from the Reich Insurance Institute, German Insurance Association, and Ministry of Finance. Total liabilities figured at about 1,895,760,000 RM. Assets comprised the value of the undertaking (given above) and stores and other items amounting to some 123 million RM. The financing for the present year is being effected in a similar manner to that followed in 1937. No change was made in the board during the year. The head of the undertaking is Dr. Dorpmüller, Minister of Transport and General Manager of the German State Railway.

Road Motors for Short-Mileage Work—I

Abridged from a paper entitled "Commercial Motor Vehicles for Short-Mileage Work: Their Design and Maintenance," presented to the Institution of Automobile Engineers

By JOHN SHEARMAN, Road Motor Engineer, L.M.S.R.

THERE are no published figures of the total number of vehicles in Great Britain engaged on short-mileage work, but reasonable estimates can be made. According to the latest returns of the Licensing Authorities (the third annual reports, 1936-37), the total number of vehicles in possession authorised under each class of licence is as follows:—

	Railway companies	Others	Total
"A" licences (including short term) ..	9,615	74,011	83,626
"A" contract	19	7,456	7,475
"B" licences (including short term) ..	—	53,775	53,775
"C" licences (including short term) ..	75	362,305	362,380
			507,256

The railway vehicles are, of course, known to be nearly exclusively on short-mileage work. Approximately one-half the vehicles running under "B" licences and three-quarters of those under "C" licences are in all probability similarly engaged. The number of vehicles on this basis works out therefore at:—

Railway vehicles	9,709
½ "B" licence vehicles	26,888
¾ "C" licence vehicles	271,785
	308,382

Another approximation may be made by considering the numbers of commercial vehicles in the various licence duty classes. Various inquiries tend to show that nearly all the vehicles of up to 1½ tons unladen weight, and probably about one-half of the remainder, excluding compression-ignition engined vehicles, are engaged on short-mileage work. The return for September, 1937, divided in this way shows:—

	Total vehicles	Estimated short mileage vehicles
Up to 1½ tons unladen weight	197,624	197,624
Over 1½ tons	254,814	127,407
C.I.-engined vehicles	7,107	—
Other categories	19,377	—
	478,922	325,031

This estimate is in close agreement with the previous one, and it seems fairly certain therefore that some 300,000 vehicles in Great Britain are engaged on short-mileage work, out of a total of about 480,000. Vehicles of between 1½ and 2 tons unladen weight are the most popular class, 107,266 being in service in September, 1937. The 2 to 2½-ton class is second with 96,560 vehicles, and these two classes between them comprise 45 per cent. of the petrol-engined goods vehicles licensed.

Vehicles for indivisible loads or for full loads of divisible traffic present little difficulty. The real difficulty, and the one which many circumstances influence, is in regard to sundries. Although electric vehicles offer undoubted advantages in certain directions, at present they comprise only 0·7 per cent. of the commercial vehicles in service in this country, and so are excluded from comment here. In railway cartage, rounds are drawn up having regard to the average density of the traffic. In the case of a town round there is little waste of time in running back for another load, whereas on an outskirt round it is desirable to cover the work in as few trips as possible. Due regard has also to be paid to the time that traffic arrives at the station, and to the fact that most traders require deliveries as early in the morning and collection as late in the afternoon as possible. The number of consignments is an important factor. The average weight per delivery or collection is just over 2 cwts., and experience has shown that about twenty-five consignments a load give most economical working. It follows therefore that 2½ to 3 tons is usually the most suitable capacity, as this amount of load is roughly that which can be collected or delivered by the carman in his normal spell of duty between meal times, and incidentally rigid vehicles of this size normally come within the 30 m.p.h. category.

So far as outlying areas are concerned, heavier-capacity vehicles may sometimes be desirable. Usually, however, the density of tonnage is less in the outlying areas and heavier-capacity vehicles are not required. There is a further point that sundries are, generally speaking, somewhat bulky in relation to weight, and it is not always possible to get, say, 4 tons of miscellaneous goods, even on a body of maximum dimensions. Under the conditions imposed by the collection and delivery of miscellaneous goods, it has been found that out of a working day the time the wheels are actually turning averages slightly over 3 hr., and that the average distance covered is in the neighbourhood of 20-25 miles. The amount of stopping, starting, and idle running involved in work of this nature is shown in Fig. 1. This represents a typical day's work for a collection and delivery vehicle, and shows that in

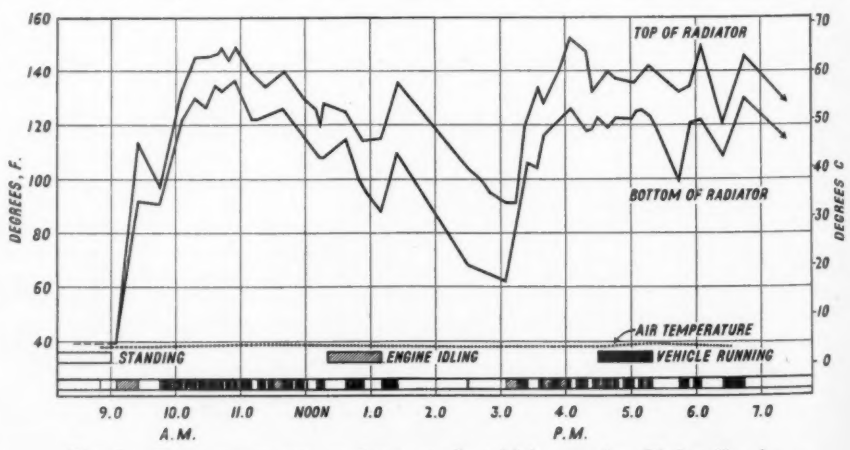


Fig. 1—Temperature test on 5-ton goods vehicle covering 20·4 miles in a day's collection and delivery work

9 hr. 55 min. the vehicle was moving 3 hr. 38 min. only; the engine was idling with the vehicle stationary for a total time of 1 hr. 44 min.; and was stopped for the remaining 4 hr. 33 min. Cooling water temperatures are also shown on this graph. The day's mileage in the case of this test was 20·4.

Horse and Motor Compared

Some interesting comparisons on the average speed of horse-drawn and motor vehicles have been made. On a two-mile round course on level ground the first half-mile was covered without a stop, representing the journey from the station to the beginning of the delivery round. Within the next mile varying numbers of stops were made (5, 15, and 25), representing calls on firms, and then the last half-mile was covered without a stop, representing the journey back from the round to the station. The actual time travelling was taken, including hand starting of the engine (the horses start themselves), but excluding all time at rest, representing the effecting of delivery, getting signatures and so forth, which does not vary whatever type of unit is used. The average miles an hour obtained in a number of tests for each group of stops by a 2-ton motor and a walking horse were:—

Comparison of a Motor and a Horse

No. of stops	Motor		Walking horse	
	Travelling time	M.p.h.	Travelling time	M.p.h.
	Min. sec.		Min. sec.	
5	10 05	11·90	40 30	2·96
15	16 58	7·7	37 14	3·22
25	22 48	5·26	40 42	2·95

Applying these figures to a typical day's work of a horse on rounds involving a travel distance of 2 miles a trip, with an average of 15 calls a journey, it is seen that the day's travel distance of 10 miles would be covered by a horse team in 3 hr. 6 min. and by a motor in 1 hr. 25 min., the motor thus saving only 1 hr. 41 min., or practically one-fifth of a working day. The conclusion is that high maximum speed is of little value in collection and delivery work, but that a rapid getaway is helpful, and reduction of loading and unloading time of paramount importance. In consequence of the conditions imposed by collection and delivery work, the annual mileage is not high. The vehicles of the British railway companies, which are employed almost exclusively on this work, average about 8,500 miles per annum, and other users find that their mileage varies between 5,000 and 17,500 miles per annum, with an average of 11,500, which figure seems to be a very fair definition of short-mileage work.

Operating Costs

The life given to the vehicle is a most important item of operating costs, as upon it depends the amount of the renewal provision that has to be set aside. In Fig. 2 renewal provision plus maintenance cost has been plotted for a number of years' life, ranging from 4 to 10 years. It will be seen that whereas these two items on the basis of a four-year life amount to 26·2 units of cost, with a ten-year life this is reduced to the more reasonable one of 18·0 units of cost, and this includes, of course, suitably increased maintenance costs. The renewal provision is calculated on a 3 per cent. sinking fund basis on the first cost of the vehicle, less tyres, which are accounted for separately, and less the estimated residual value of the vehicle at the end of its life. Long life justifies higher first cost, indeed necessitates it to some extent, and is, in the author's opinion, the key to the economical operation of short-mileage vehicles. In the case of a short-mileage vehicle covering, say, 10,000 miles per annum, a life mileage of 100,000 miles is surely by no means an unreasonable expectation.

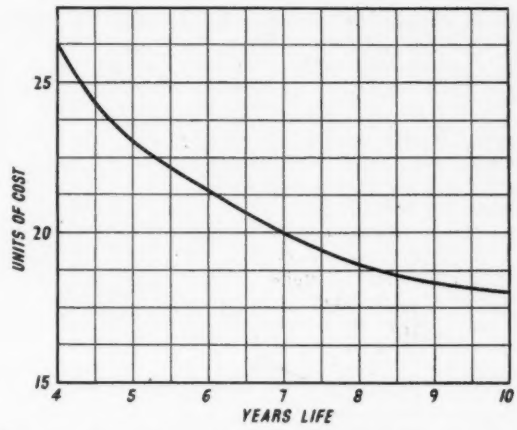


Fig. 2—Renewal provision and maintenance cost of a 3-ton rigid vehicle for a life of from four to ten years

The design of the vehicle must be such, however, that the cost of repairs during its life does not outweigh the saving in renewal provision. The present practice of manufacturers of quantity-produced vehicles of changing the design after three to four years of production, thereby rendering many of the new parts not interchangeable, with the consequent difficulty of obtaining spare parts for the old type of vehicles, is one which causes practical difficulties in allotting a reasonably long life.

In Fig. 3 the various items of running-cost expenditure are expressed as a percentage of the total operating cost of a standard 3-ton vehicle with a 10-year life, and the influence of annual mileages ranging between 8,000 and

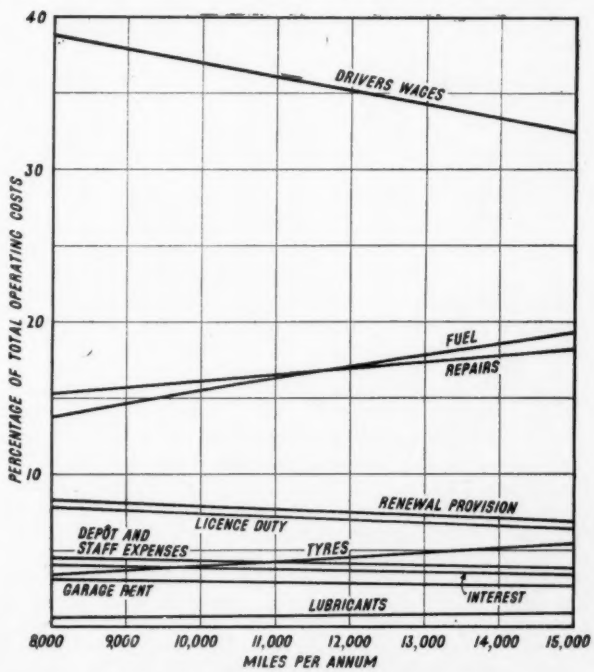


Fig. 3—Items of running-cost expenditure for a 3-ton rigid vehicle with a 10-year life

15,000 is shown. A feature of the operating costs of motor vehicles is the high percentage (50-60 per cent.) of the charges over which the operator has very little control. For example, driver's wages (38·7 to 32·4 per cent.) are fixed by agreements; licence duty (7·9 to 6·7 per cent.), garage rent (3·3 to 2·8 per cent.), and interest (4·2 to 3·6 per cent.), and renewal provision (8·2 to 6·8 per cent.) are also in the nature of fixed charges. Among the remaining items, repairs account for 15 to 18 per cent. of the total costs, and any means of achieving a reduction in this figure must be closely considered. By employing high-grade materials of highest durability, the first cost of the vehicle may be slightly increased, but a reduction in total costs follows as repairs are reduced thereby. Fuel accounts for 13 to 19 per cent. of the total costs. Tyres, although not a very expensive item in short-mileage vehicles, still leave considerable scope for economies, and lubricating oil costs are so low that there is no excuse for not using oil of first-class specification.

Horse and Motor Vehicle Costs

Comparison of horse and motor vehicle costs is a matter of considerable interest in short-mileage work, and is set out as follows:—

COMPARATIVE HORSE AND MOTOR COSTS—3,000 MILES PER ANNUM

Horse		Mechanical horse		Increase or decrease
	Cost units		Cost units	Cost units
Carter's wages ..	56·8	Driver's wages ..	62·1	+ 5·3
Interest (one horse) ..	1·0	Interest (one tractor)	3·5	+ 2·5
Replacement (1 horse) (6½ years' life)	2·6	Renewal provision (1 tractor) (10 years' life)	6·5	+ 3·9
Stabling and bedding	5·3	Garage rent ..	5·3	—
		Licence duty ..	13·0	+13·0
Stablemen and horse-keepers, wages, supervision	7·1	Depot and staff expenses	4·5	— 2·6
Provender	15·8	Petrol and lubricants	8·5	— 7·3
Shoeing	2·5	Tyres	2·0	— 0·5
Harness, repairs, and veterinary service	1·3	Repairs (tractor) ..	12·3	+11·0
	92·4		117·7	+25·3
Interest (2 vans) ..	1·5	Interest (2 trailers)	2·3	+ 0·8
Renewal (25 years' life) (2 vans)	0·7	Renewal (10 years' life) (2 trailers)	4·3	+ 3·6
Repairs (2 vans) ..	4·3	Repairs (2 trailers)	5·8	+ 1·5
Tyres (2 vans) ..	1·1	Tyres (2 trailers) ..	1·0	— 0·1
	100·0		131·1	+31·1

Under these conditions it is clear that the motor vehicle is not an economical proposition, and cannot, on a purely cost basis, replace a horsed vehicle unit for unit. Petrol is cheaper than provender, the respective costs being 1·61d. a mile and 3·06d. a mile, which accounts for a difference of 7·3 units of cost, and it is of interest to note that whereas a horse consumes about 6,000 B.Th.U. per gross ton-mile of work performed, a petrol-engined mechanical horse uses only about 2,700 B.Th.U. for the same amount of work. A small item is, however, credited towards horse costs for the value of exhaust products received. Possibly some proportion of the cost of provender should be balanced against repairs of the motor vehicle, as the horse is continually undergoing a process of metabolic maintenance.

Evolution of the Mechanical Horse

Towards the end of 1929 the technical and operating officers of the L.M.S.R. felt that it should be possible to produce a mechanically-propelled vehicle which would be able to haul carts and drays, and by working more economically than standard motor vehicles replace a certain number of horses. A few very experimental models had been previously offered and tested without much success, including a one-wheeled self-contained unit to attach to the shafts of existing horse vehicles. From the outset it was realised that it was essential for the vehicle to be able to manœuvre as freely as a horse in the confined and congested spaces often found in railway goods yards and elsewhere. At the same time simplicity in design and reasonable maximum speed were required so as to keep the maintenance and running costs low.

Accordingly, experiments were instigated by the author and his assistant, Mr. V. R. Bowen Cooke, and carried out in the L.M.S.R. carriage and wagon works at Wolverton. The first experimental "hook up" vehicle had as a motive unit a converted Morris Cowley motorcar chassis, upon the rear end of which was superimposed a standard 30-cwt. horse cart. From Fig. 4 it will be seen that the motive portion of the unit carried inclined ramps engaging with rollers beneath the turntable of the trailer portion. The trailer was also fitted with manually-operated folding legs to support it when uncoupled from the tractor. This vehicle enabled information in regard to suitable engine power, gear ratios, and so forth, to be ascertained, but manœuvring ability was deficient.

The next step therefore was the construction of a power unit adapted from a Roberts three-wheel platform truck. This vehicle turning at full lock is shown in Fig. 5. Tests carried out early in 1930 showed that the solution of the manœuvring problem was to be found in a single steering wheel which could be rotated through an arc of 180 deg. This vehicle showed a remarkable degree of freedom to manœuvre, and proved itself capable in this respect of doing all that could be done by a horse-drawn vehicle. It also had a shorter overall length. In the course of these experiments it became clear that the foundation of a very useful type of vehicle had been laid down, and a specification based upon it was circulated to leading motor vehicle manufacturers. In this the single front wheel was to be retained for steering only, the power being transmitted to the rear wheels as in a normal motor vehicle.

In August, 1930, Karrier Motors Limited had produced such a vehicle, named the Cob, and it proved that the right deduction had been drawn from the earlier experimental vehicles. Driven by a 7 h.p. Jowett two-cylinder horizontally-opposed water-cooled engine, with chain-drive reduction gear and three-speed gear-box, it was capable of carrying a load of 3 tons at 18 m.p.h. on the level and of climbing and restarting on a gradient of 1 in 8 with this load. Attention was now directed towards alternative means of coupling and uncoupling the tractor from its trailer and particularly means by which a tractor could be made to pick up and convey a cart or dray which could be manœuvred when disconnected from its trailer. Fig. 6 shows the "overlift" gear originally employed. The front axle of the trailer engaged with the ends of arms pivoted on the tractor which, when driven forward by built-in hydraulic jacks, lifted the axle so that its wheels cleared the ground and also carried it forward on to stops on the tractor frame. A second hydraulic cylinder provided means of reversing the operation when uncoupling, and both cylinders were actuated from a single reversible hand pump mounted behind the cab.

Although this gear functioned as intended, manual operation of the pumps proved to be slow and laborious. Hauling horse carts by means of mechanical horses was subsequently abandoned, as it was found that such vehicles

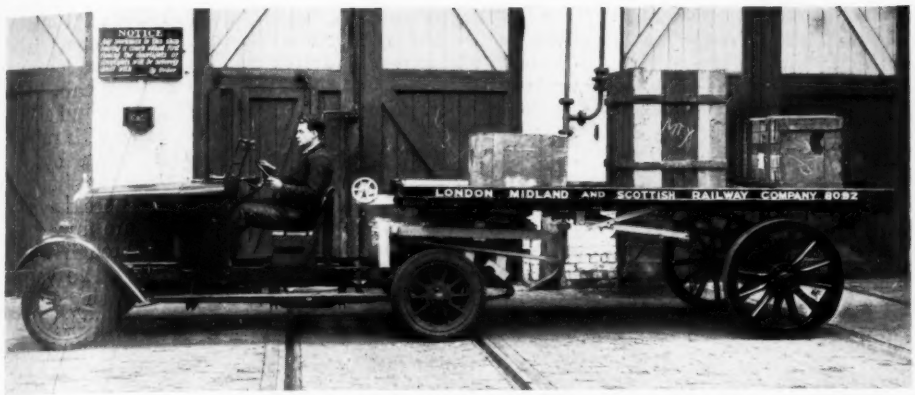


Fig. 4 (left)—Experimental tractor, converted from a Morris-Cowley motor-car chassis, for hauling a 65-cwt. horse dray

Fig. 5 (right)—Experimental tractor based on a Roberts three-wheel platform truck, hauling a converted horse cart and shown at full lock

Fig. 6 (left) — Karrier 1930-pattern mechanical horse fitted with overlift gear, hauling a horse dray with standard forecarriage and front wheels

designed and constructed for slow speeds were not suitable for mechanical traction, even if the rear wheels were shod with rubber tyres and, in addition, the rear wheel diameter of the tractor was so restricted as to render the use of pneumatic tyres impossible. After the consideration of many schemes, the Wolverton gear was produced. An entirely new forecarriage was constructed carrying supporting wheels on brackets extended to come outside the tractor road wheels, and the inclination of the ramps provided sufficient lift to give the supporting wheels clearance when coupled to the tractor. The coupling and uncoupling operations had now become fully automatic, dispensing with all manual operations save the insertion of the locking pins into the forecarriage, and at this stage it may be said that an entirely satisfactory, though somewhat clumsy-looking, coupling gear had been evolved. The tractors built by Karrier Motors Limited, to operate with this gear were shod with pneumatic tyres as were the trailers shortly afterwards.

From the point of view of historical interest it may be recorded that the first demonstration of a mechanical horse vehicle was made by the L.M.S.R. on September 18, 1930, at Maiden Lane depot, London. The first Karrier model and the platform truck conversion were then demonstrated to the Chairman, vice-presidents, and officers of the L.M.S.R., and subsequently to other railway companies. On November 3, 1930, the same vehicles were demonstrated to the press, and, judging by the notices received, created a considerable impression in motor transport circles. Shortly afterwards, mechanical horse vehicles were

put into service by all the British railway companies. Early in 1931 Karrier Motors Limited fitted a four-cylinder engine of its own manufacture as alternative.

Later another manufacturer entered the field, and in July, 1933, the L.M.S.R. put into service the Mechanical Horse produced by Scammell Lorries Limited. Both firms also produced a similar, though heavier, vehicle capable of carrying up to 6 tons load. The Scammell mechanical-horse vehicles were driven by four-cylinder water-cooled engines, and the engine and transmission was in most respects similar to that of contemporary motor and commercial vehicle design. The main points of interest centre in the coupling gear, which embodied the principles of automatic coupling and a retractable undercarriage. At the expense of some increase in complication, the supporting wheels of the trailer forecarriage were arranged inside the tractor rear wheels and frame, and automatically folded up out of the way when the tractor coupled up.

The new vehicles, which became familiarly known as

Fig. 7—Experimental 2-ton mechanical horse with air-cooled twin engine

"tin horses," rapidly became popular with all railway companies, and from the date of their introduction their growth in numbers has been continuous. At the end of 1934 the total number in railway service was 1,395, and at the time of writing the number approximates to 3,500. The mechanical horse also seems to have found considerable popularity in other spheres, and an increasing proportion of the total number of vehicles manufactured at the present time is being absorbed by users other than the railway companies.

The Light Mechanical Horse

In an attempt to widen the field of mechanical horse operation, which has now become competitive to normal motor vehicles rather than horses, a lighter and simpler model is being experimented with by the railway companies. The new vehicle, which is characterised by extreme simplicity and equipment suitable for only the shortest distances, is described as a light mechanical horse to distinguish it from the existing 3 and 6-ton types, and has a maximum load capacity of 30 cwt. or 2 tons, depending on the type of trailer employed. From Fig. 7 it will be seen that the normal arrangement of a three-wheel tractor and two-wheeled superimposed trailer is employed. The engine of the new unit is radically different, however, in that it is an air-cooled 60 deg. V. twin situated approximately amidships. The bore and stroke are 77·6 mm. and 88 mm. respectively, giving a swept volume of 832 c.c. and the engine develops 15 b.h.p. at 3,000 r.p.m.

The engine, clutch, gear-box, and rear axle are all constructed in one unit and anchored at the front by means of a single-point rubber suspension to the frame. The complete unit is readily detachable, and its centre location permits of access from either side of the driver's cab. The rear suspension is by means of steel coil springs and shock absorbers, located transversely by a link fitted with rubber bushes. Driving and braking torque is taken by the engine, gear-box, and rear axle unit and transmitted to the frame through the front anchorage. The side-valve cylinders with detachable heads and liners are finned for air-cooling, and enclosed in a metal cowl through which air is forced by means of a belt-driven fan. The valves of both cylinders are directly operated from a single camshaft through the medium of non-adjustable tappets. The front wheel has a lock of 70 deg. in each direction, and is carried on a vertically-mounted steering shaft. The shaft housing is supported on a rubber compression spring and is free to move in a vertical plane in spring-loaded friction material bushes which act as dampers.

The same power unit is available in a rigid four-wheeler of 30-cwt. capacity, and in all it appears to be a notable effort to meet the special needs of short-mileage operation, and such features as the reduction to a minimum of the number of greasing points on the chassis and improved accessibility should do much to reduce maintenance costs. Air-cooled engines present many attractions for short-mileage vehicles, as, in addition to eliminating the cost and trouble associated with radiators and cooling systems, the rapid warming up of an air-cooled engine should help in reducing the excessive cylinder wear which is found to take place in vehicles which are started and stopped frequently, while the troublesome and expensive anti-freezing precautions necessary where vehicles are not stabled in heated garages are eliminated.

Pros and Cons of Mechanical Horse Transport

The mechanical horse within its proper capacity and radius of action is the cheapest form of motor vehicle to run. Its operating advantages are greatest when it is possible to operate a shuttle service with two or even more trailers and, in addition, a number of different trailers for carrying varying and specialised loads can be worked at different times with the same tractor. This, of course, results in a big saving compared with purchasing and licensing specialised vehicles which might not be working full time. The remarkable freedom to manœuvre possessed by the mechanical horse also makes it of great use in congested areas, and it is true to say that the mechanisation of certain stations, built years ago, when only horse traffic was envisaged, would have been impossible without it. As is only to be expected in a new development such as this, certain mechanical weaknesses have become apparent. In particular, engine wear and tear has in the past been heavy, although this is being overcome by improved materials and design modifications. The clutch is called upon to perform exceptionally arduous duties, due partly to the fact that the vehicles work continually in congested streets and areas and partly to the fact that the small engine size in relation to gross weight makes frequent gear changing necessary. In other respects the vehicle suffers much the same troubles as normal rigid vehicles.

Railway-owned Toll Bridge at Fiddown

An interesting structure in County Kilkenny which the Great Southern Railways Company has a statutory obligation to maintain

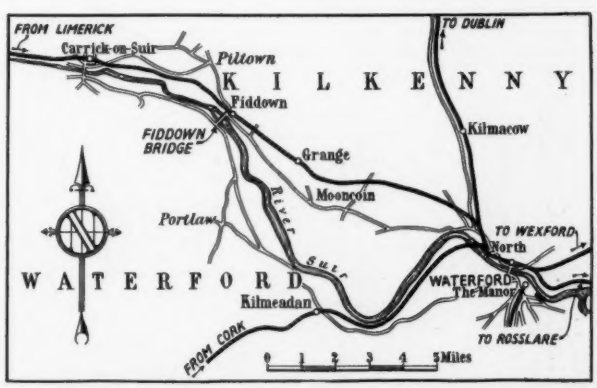
General view of Kilkenny section of the bridge, looking towards County Waterford

THE first road bridge across the River Suir above the city of Waterford is a timber toll bridge some 10 miles from the city. It is an interesting survival of early railway legislation, and is unique in Ireland in being a road toll bridge owned and operated by a railway company. The structure consists of two bridges connected by a 570-ft. causeway crossing an island in mid stream; the bridge over the Waterford channel contains 8 timber spans and that over the Kilkenny channel 9 timber spans and a steel swing span. The timber spans, which have an average length of about 41 ft. 3 in., are supported on trestles of timber piles and consist of two queen-post trusses on each side and a trussed beam under the centre of the thoroughfare; the timber flooring is carried on 12 in. × 6 in. cross joists. The steel swing span is provided for the passage of small steamers and schooners as the river is navigable to Carrick-on-Suir some 5 miles further upstream and over 30 miles from the sea. The depth of the deepest channel is 9 ft. at L.W.O.S.T. with a tidal rise and fall of over 13 ft.

With the exception of the opening span, the bridge over the Kilkenny channel is the original structure which was opened for traffic in 1853, but the Waterford bridge was burned to the water during the "trouble" of 1922-23 and rebuilt to the former design at a cost of £6,400. A proposal to replace it in reinforced concrete fell through. At this time also the swing span, which is operated by a hand-power winch on a rack and pinion was renewed.

Probably the most interesting feature about the work is its legal history and the conditions under which it is operated. The original Waterford & Limerick Railway Act of 1845 left undecided whether the route to be taken from Waterford to Carrick-on-Suir should follow the north or south bank of the river, and it was provided that the Board of Trade should decide. At that time Portlaw on the south side had a flourishing cotton mill and a large iron foundry, but other interests were antagonistic. Finally the north bank was chosen, and the Act of 1851 is largely concerned with this route and the provision of the bridge at Fiddown to give access to the railway from Co. Waterford. The importance placed on the bridge is signified by the fact that the first clause in the Act which refers to it provides that work on the structure must be started at once, before the building of the line, and that the railway from Waterford to Carrick-on-Suir must not be opened for traffic until the bridge was completed. To make doubly sure the Certificate of a Magistrate to the effect that the road bridge was completed had to be produced before trains might run.

The Act is most explicit also as to the design to be adopted. It is stipulated that the bridge shall be of timber (so that the proposal to renew in reinforced concrete would have required an Act of Parliament to legalise it) and that the spans must be at least 40 ft. The underside



Sketch map showing position of Fiddown bridge, owned by the Great Southern Railways Company

Details of the timber toll bridge across the River Suir at Fiddown, Eire, which is owned by the Great Southern Railways Company

must be flat for the entire width and the height 9 ft. over quay level at Carrick-on-Suir. The opening swing or draw span must also be 40 ft. clear, and constructed over the Kilkenny stream " in such manner and at such part of the bridge as shall be previously approved of and directed by the Lord High Admiral." A light near the centre of each bridge was required for the safe guidance of vessels, and this raised an interesting point recently when an application was received to remove one of the lights to the span crossing the main channel. The Act laid down that the light might be altered with the approval of the Lord High Admiral but, as Ireland possessed no navy, the question arose as to who represented him in the present scheme of things. The appropriate Minister was eventually discovered and the necessary permission obtained.

Kilkenny section of bridge, looking towards toll house

The tolls and provision to enforce them are also set forth, and include 3d. for every animal drawing a vehicle (apparently a four-in-hand would pay 1s.); 2d. for every unladen beast of burden; 1d. for every head of cows or neat cattle; ½d. for every head of calves, sheep, and swine; and ½d. for every pedestrian. Only one full toll for the same animals or vehicles need be paid between midnight and midnight, excepting that hire vehicles must pay on every fresh hiring. Exemptions from the tolls make interesting reading and include:—

> " that the bridge tolls shall not be demanded for any horses or carriages attending Her Majesty or any member of the Royal Family; nor for any horses or carriages employed in conveying the mails of letters and expresses; nor for any horses or carriage conveying or going empty to fetch any manure or lime for improving land; nor for any infantry or foot soldiers or officers in Her Majesty's service upon their march or upon duty; nor for the horse of any officer or soldier; nor for any horses, cattle, or carriage employed in carrying wounded, ordnance, stores, or for any person belonging to a corps of yeomanry or volunteer cavalry going to or returning from any place of exercise, inspection, or review, provided that such person shall be dressed in the uniform of their corps; nor for any horse or carriage conveying any constable or policeman or magistrate while on duty or conveying any vagrant or prisoner sent by legal warrant."

Toll house from swing span

The procedure for enforcing the payment of tolls is fully laid down, with penalties as high as £5 though there appears to be no record of an action ever having been taken.

Maintenance of Road Bridges over Railways

THE case of Swain *v.* Southern Railway Company, reported in a recent issue of *The Times Law Reports*, decides points of interest regarding the maintenance of road bridges over railways and regarding a time limit for bringing actions against railway companies. The plaintiff was cycling along a road which was carried over the defendant company's railway by a bridge, when his bicycle caught in a rut causing him to be thrown and injured. His action against the company—begun more than six months after the accident—was for negligence and for breach of statutory duty to repair the road. Mr. Justice Humphreys in the King's Bench Division entered judgment for the plaintiff, holding (1) that where a railway company was under an obligation, under section 46 of the Railways Clauses Consolidation Act, 1845, to maintain a bridge over the railway and the approaches thereto, the company was liable not merely for misfeasance but also for non-feasance; (2) that the railway company was not a public authority performing a public duty so as to be able to invoke the aid of the Public Authorities Protection Act, 1893; (3) that the liability of the railway company was to maintain the bridge and the approaches thereto in the state in which they were when constructed in accordance with section 46 and so as to be safe for ordinary traffic.

It will be interesting to see whether this case will be allowed to settle the matter so far as the main-line railways are concerned: on the question of a time limit the London Passenger Transport Board has, in another case, been held to be a public authority.

Overseas Notes

Rationing in Japan

The exigencies of the war in China have led to strict rationing of road transport fuel. A private car is now allowed only 1 gal. of fuel a day, a small lorry 1¼ gal., a large lorry 5 gal., and a taxi 4 gal.

Polish Bus Services in 1937

At the end of last year there were 921 motorbus services in Poland. These covered a total distance of 25,900 km. (16,100 miles). The buses carried 28,800,000 passengers during the year. Of the 921 lines, 34 are run by the Polish State Railways and the rest by private enterprise.

Hydraulic Transmission in America

The Yellow Truck & Coach Manufacturing Company, one of the largest bus builders in the United States, which is a division of the General Motors Truck Corporation, has adopted the Lysholm-Smith system of hydraulic transmission as a standard for its buses. An order for 100 diesel coaches with this hydraulic transmission has just been received from the Greyhound Lines.

Effective Road-Rail Co-ordination in New Zealand

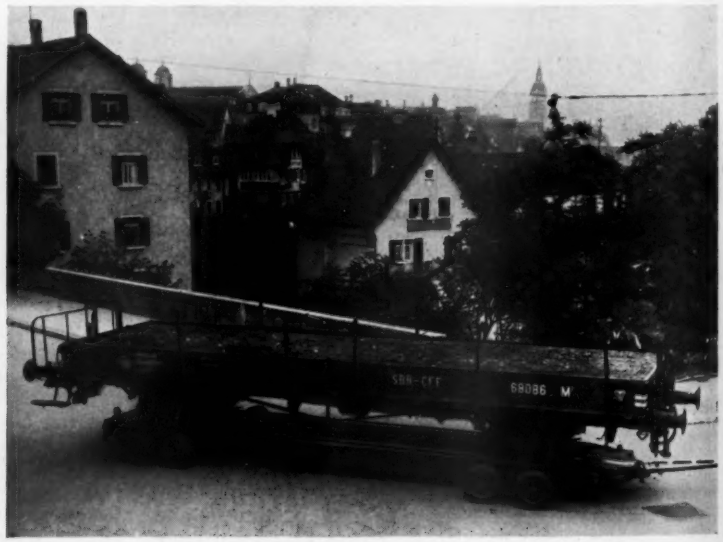
Improvements in the road and rail timetables as between Christchurch and Dunedin have been made recently. Besides the usual 8.35 a.m. daily express and the 12.25 p.m. express on Wednesdays and Fridays from Christchurch to Dunedin, daily road motor services have been introduced, leaving Christchurch at 2.25 a.m. and at 1.30 p.m., each reaching Dunedin about nine hours later. From Dunedin to Christchurch the present express trains, leaving Dunedin at 8.45 a.m. on Mondays, Wednesdays, and Fridays, and at 11.35 a.m. on all week days excepting Monday, are now supplemented by week-day road services leaving Dunedin at 3.30 a.m. and at 2.55 p.m. and arriving Christchurch at 1.30 p.m. and 12 midnight respectively. This co-ordinated timetable, inaugurated on August 22, allows the choice of at least three services at well-spaced intervals daily in each direction, and is much appreciated by travellers. It does much to improve the existing transport facilities between the two principal South Island centres, and, because of the time saving it makes possible, is proving helpful in the further development of business and in the extension of tourist travel.

Motor Services in Sudetenland

The road motor services formerly run by the Czechoslovak State Railways in the ceded territory have been replaced by Reichsbahn services. Some 100 vehicles of the latest type have been introduced, and the routes altered in a number of cases to meet the changed conditions in the localities affected. Goods road motor services have also been started and depots established at a number of places, including Eger, Aussig, Reichenberg, and Franzensbad. In some cases these services are helping to tide over the inconvenience resulting from the interference to rail traffic due to the changed frontier. New outlying districts have also been connected with the railway. 55 absolutely essential bus lines were immediately re-started, and subsequently service was provided on a further 11 lines.

Rail Wagon Conveyance by Road in Switzerland

The Swiss Federal Railways have recently introduced two road units for the conveyance of standard-gauge goods wagons; one was demonstrated in various centres, and the two will be placed in service shortly at Zurich and Winterthur. The innovation may be regarded as complementary to the system of small containers already introduced by the Federal Railways, as it provides door-to-door service for complete wagon-loads without involving firms in the expense of having private sidings. The new vehicle runs on 16 rubber-tyred wheels, so arranged in pairs that it can turn in a comparatively small space—curves of 6·44 m. minimum radius for the wheels inside the curve—and providing very steady running. It is designed for loads up to 32 tonnes, and for speeds of 5 to 15 km.p.h., according to the state of the road. A special type of tractor, built by Swiss firms, is to be used to haul the loaded transporter-truck, and this is fitted with a capstan for drawing the wagon on to the truck.



Two views of the new road unit of the Swiss Federal Railways for conveying standard-gauge rail wagons. On the left is seen the loading ramp, and the picture above shows a wagon being hauled

RAILWAY NEWS SECTION

PERSONAL

SOUTHERN RAILWAY APPOINTMENTS

The Southern Railway announces the following appointments:—

Mr. W. C. Moore to be Chief Assistant to the Chief Electrical Engineer; Mr. Moore was formerly Chief Assistant to Mr. A. Raworth (the present Chief Electrical Engineer) when the latter was Electrical Engineer for New Works.

Mr. E. A. W. Turbett, Works Manager, Eastleigh, to be Mechanical Engineer, Eastleigh.

Mr. F. Munns, Assistant Works Manager, Eastleigh, to be Locomotive Works Manager, Eastleigh.

Mr. K. H. Morriss, Assistant to Works Manager, Eastleigh, to be C. & W. Works Manager, Eastleigh.

Mr. W. Y. Sandeman, who, as announced in our issue of November 11, has been appointed Assistant Engineer, Southern Area, London & North Eastern Railway, served his apprenticeship with a firm of consulting engineers in Edinburgh, and joined the engineering staff of the former North British Railway in 1913 as an assistant in the Maintenance Department, which position he held until 1915. In that year he was appointed an Assistant Engineer to the Port of London Authority, and had charge of constructional work at Victoria Dock. A few months later he received a Commission in the Royal Engineers, and served with a Field Company in France until the end of the war; he was awarded the Military Cross in the New Year Honours of 1918. After demobilisation he returned to the service of the North British Railway as an assistant in the Parliamentary and Constructional Department, and in the autumn of 1925 was appointed Assistant-in-charge of that department, L.N.E.R. In 1928 Mr. Sandeman was appointed District Engineer, Northern District, Southern Scottish Area, and in January, 1935, was transferred to take charge of the Western District in that area, with headquarters at Glasgow. In February last year, Mr. Sandeman was transferred to London as Assistant to the Engineer (General), Southern Area. He is a Bachelor of Science in Engineering of Edinburgh University, and an Associate Member of the Institution of Civil Engineers.

Mr. A. C. F. Calladine, whose appointment as Assistant (Passenger Services) to the Chief Operating Manager, L.M.S.R., was recorded last week, entered the service of the former Midland Railway as a probationary clerk at Bakewell in July, 1902. After clerical experience there and at Hassop, he was transferred to Manchester as Relief Clerk in June, 1905, and promoted in

Mr. W. Y. Sandeman
Appointed Assistant Engineer, Southern Area, L.N.E.R.

Mr. A. C. F. Calladine
Appointed Assistant (Passenger Services) to Chief Operating Manager, L.M.S.R.

Luncheon of the Retired Railway Officers' Society at the Charing Cross Hotel on November 15
Photo] (See report on page 883) [Swaine

July, 1912, to Headquarters Relief Clerk under the General Superintendent at Derby. In December, 1914, Mr. Calladine was appointed Depot Master at Ashton Road, Manchester, and Yard Master, Ancoats (Manchester), but in January, 1916, he returned to the General Superintendent's Office at Derby to take charge of the Outdoor Office. During the war Mr. Calladine served in France with the Railway section of the Royal Engineers, and upon demobilisation in 1920 resumed duty with the Midland Railway as Head Office Inspector (Staff) attached to the General Superintendent's Office at Derby, and was later engaged upon special duties and in the relief of the principal stationmasters. At the amalgamation in January, 1923, Mr. Calladine became Deputy Indoor Assistant to the Chief General Superintendent, Derby; in 1924 he transferred to the Passenger Trains Section of the same organisation, and in October, 1926, was appointed Assistant of that section. From July, 1931, until December, 1935, he was Stationmaster at St. Pancras, going to Scotland in the latter month as District Goods & Passenger Manager, Edinburgh. In March, 1937, Mr. Calladine was appointed Assistant Operating Manager, Scotland, which position he now vacates upon appointment as Assistant (Passenger Services) to the Chief Operating Manager, *vice* the late Mr. Charles Parker.

We are glad to report that the latest bulletin regarding Mr. Ashton Davies, Acting Vice-President, L.M.S.R., who is suffering from typhoid fever, states that he is progressing satisfactorily.

Mr. C. Grasemann, Public Relations and Advertising Officer, and Mr. J. Harrad, Assistant Advertising Officer, have been appointed directors of the *Southern Railway Magazine*.

We regret to record the death on November 12 of Mr. C. Leslie Terry, Managing Director of Serck Radiators Limited. The funeral service was held at the parish church of St. Margaret, Olton, on November 16, followed by interment at the Robin Hood cemetery.

Mr. H. Mansbridge has been elected Chairman of the Proprietors of Hay's Wharf Limited, succeeding the late Lt.-Colonel Sir John Humphery, whose death was recorded in our issue of August 5. Mr. Mansbridge is a Director of the Southern Railway.

Mr. C. J. Selway, Passenger Manager, Southern Area, London & North Eastern Railway, presided at the eighteenth annual masonic reunion dinner of L.N.E.R. staff held at the Hotel Great Central, London, on Saturday last, November 12. The Chairmen of the reunions held in the five previous years have been respectively, Mr. W. J. Powell, Mr. T. F. Day, Sir Murrough J. Wilson, Mr. William Whitelaw, and the late Sir Charles Batho.

Part of the large company at the L.M.S.R. (London & Birmingham) centenary banquet at Grosvenor House on Monday. Lord Stamp presided, and the principal guest was H.R.H. the Duke of Gloucester. *(See opposite page)*

[Swaine Photo]

The London & Birmingham Railway Centenary Banquet

H.R.H. The Duke of Gloucester was the principal guest at the L.M.S.R. banquet to 800 on Monday, over which Lord Stamp presided

Lord Stamp, Chairman and President of the Executive of the L.M.S.R., presided on Monday night at a banquet given at Grosvenor House, Park Lane, London, to commemorate the centenary of the completion throughout of the London & Birmingham Railway. His Royal Highness the Duke of Gloucester was the principal guest and the company, which numbered nearly 800, included the following, as well as ladies:

Stanley J. Adams, the Rt. Hon. Albert V. Alexander, G. H. Loftus Allen, Sir Alan Anderson, H. H. D. Anderson, the Rt. Hon. Sir John Anderson, W. Anthony, T. E. Argile, A. J. Arnold, the Rt. Hon. Lord Ashfield, T. J. D. Atkinson, S. J. Aubrey.

W. T. Bailey, William Baird, F. W. Baker, George Balfour, J. R. Ball, J. Ballantyne, Colonel Sir Donald Banks, Sir John D. Barlow, W. H. Barnes, Sir Charles C. Barrie, Guy V. Baxendale, H. K. Beale, S. R. Beale, Captain H. P. M. Beames, O. P. Beeman, Sir J. George Beharrell, the Rt. Hon. Lord Mayor of Belfast (Sir Crawford McCullagh), the Belgian Ambassador, A. R. Bell, G. S. Bellamy, Sir Harold Bellman, William Bemrose, S. Berkeley, R. P. Biddle, Sir A. Stephen Bilsland, W. J. E. Binnie, W. R. Birchall, Sir Robert Bird, the Lord Bishop of Birmingham, the Mayor of Blackpool (Alderman W. Rostron Duckworth), Robert K. Blair, R. D. Blumenfeld, A. E. Bond, Sir Max J. Bonn, Charles Booth, Charles Bostock, A. F. Bound, G. F. Boxall, H. Leslie Boyce, A. J. Boyd, G. R. Bradbury, W. P. Bradbury, Sir William Bradshaw, Sir William Bragg, James Briggs, E. Clive Brooks, Sir Leonard Browett, Ashley Brown, Robert Brown, Sir Robert Bruce, the Rt. Hon. S. M. Bruce, Sir Charles Bruce-Gardner, W. C. Brudenell, O. V. Bulleid, Colonel H. Burchall, the Rt. Hon. Leslie Burgin, R. H. Burrow, Sir Robert Burrows, Eric Burt, Geoffrey Burton, the Hon. E. C. Butler-Henderson, C. R. Byrom.

R. Hervey Cabell, Junr., George Cadbury, J. J. Calder, R. Carpmael, Sir Emsley Carr, A. M. Carr-Saunders, W. B. Carson, C. H. Carter, S. B. Carter, His Excellency Baron E. de Cartier de Marchienne, Major W. H. Carver, A. L. Castleman, V. P. Ceresole, Walter Chance, J. T. Chasney, W. H. Chisholm, R. F. Church, Lt.-Colonel E. Kitson Clark, W. H. C. Clay, P. A. Clews, John Cliff, T. Clifton, W. Clower, Dr. Mandall Coates, C. B. Collett, H. J. Comber, Alexander Comley, B. W. C. Cooke, Major-General Sir James Cooke-Collis, Dudley F. Cooper, P. Ashley Cooper, Lt.-Colonel F. A. Cortez-Leigh, S. O. Cotton, the Rt. Hon. Sir George L. Courthope, F. C. A. Coventry, Major P. J. Cowan, E. F. Cox, F. E. Cox, Sir Edmund Crane, Commander Sir Charles Craven, Sir Herbert J. Creedy, Sir John S. Crooke, R. G. Crosbie, Ewart G. Culpin, Major R. D. K. Curling, Sir William C. Currie, the Hon. F. N. Curzon.

Sir Henry H. Dale, C. Dandridge, H. Basil Darby, E. H. d'E. Darby, G. L. Darbyshire, J. D'Arcy-Dawson, Dr. C. G. Darwin, C. R. Dashwood, R. G. Davidson, C. H. Davies, F. R. E. Davis, H. Davis, Major L. F. S. Dawes, James N. Dawson, G. Cole Deacon, P. B. de Clegg-Mellor, the Rt. Rev. Bishop de Labilliere (Dean of Westminster), Sir Maurice Denny, the Rt. Hon. Lord Derwent, Lt.-Colonel H. V. Bache de Satgé, Major M. J. M. Dewar, Captain Gerard P. Dewhurst, His Excellency Dr. Herbert Von Dircksen, Bernard Dudley F. Docker, Dr. Julius Dorpmüller, W. Dorrington, Sir William Dugdale, John Dulanty, J. B. Dunkley, T. W. Dunn, W. G. Dunn, Sir Francis Dunnell, R. B. Dunwoody.

Sir John Eaglesome, H. L. Eason, the Rt. Hon. Lord Ebbisham, Alexander Eddy, W. P. N. Edwards, Prof. A. C. G. Egerton, William J. Elliott, H. J. Ellison, G. Ellson, A. Endicott, John M. Erskine, the Rt. Lord Essendon, Evan Evans, Oswald G. Eveson.

C. E. Fairburn, H. W. Faircloth, E. Falconer, Sir Ernest Fass, N. D. Fawkner, W. Fenn, Edward B. Fielden, S. H. Fisher, Dr. A. P. M. Fleming, M. J. Foggo, Sir Julian Foley, Colonel Follows, the Rt. Hon. Lord Forteviot, Lt.-Colonel Charles Francis, Air Marshal Sir Wilfrid Freeman, T. E. Freeston, Roger Fulford.

Sidney E. Garcke, Sir Thomas Gardiner, P. M. Gault, J. F. Gee, Vernon Gee, W. S. Geldard, the German Ambassador, Sir Alexander Gibb, Maurice Gibb, A. L. Gibson, E. Gilbert, R. Gittoes-Davies, the Rt. Hon. Lord Glanely, Major Sir Ralph G. C. Glyn, M. Gonon, E. Gore-Brown, Sir Ernest A. Gowers, G. Grafton-Green, Malcolm Graham, Sir Guy Granet, G.B.E., R. Grant-Ferris, C. Grasemann, A. R. Gray, A. Winter Gray, Robert Gray, Sir Henry Grayson, O. F. Grazebrook, W. Curtis Green, Lt.-Colonel J. H. Maitland Greenly, the Rt. Hon. the Viscount Greenwood, J. E. Greenwood, Major J. R. Greg, C. J. Gregg, A. L. Gregory, Sir Robert Greig, Sir Nigel Gresley, Herbert E. Griffin, R. O. Griffiths, Walter T. Griffiths, Francis Grundy.

R. W. Hale, F. L. Halford, the Rt. Hon. the Viscount Hambleden, C. J. Hambro, Sir Horace P. Hamilton, W. Hanlon, Sir Patrick Hannon, C. Hardacre, Dr. F. K. Hardt, A. M. Harris, D. J. Harris, Captain J. W. Harris, C. S. Harrison, Major Owen Hart, Brig.-General Sir Harold Hartley, Victor Heal, John F. Heaton, Robert Henrey, T. M. Herbert, F. G. Hewitt, W. L. Hichens, Col. Frank Hilder, Professor A. V. Hill, Major-General B. A. Hill, Oliver Hill, Philip E. Hill, R. H. Hill, T. Hill, J. R. Hind, A. Hittinger, George Hogarth, Sir Edward Holland, Robert Holland-Martin, Lt.-Colonel C. H. Innes Hopkins, E. Hopkinson, Thomas Hornby, W. Howard-Williams, the Rt. Hon. the Earl Howe, R. J. Howley, A. G. Hubbard, Captain Austin Hudson, George Hughes, E. S. Hunt, Jonathan Hunter, Sir Cyril Hurcomb, E. Huskisson, G. S. Hussey, G. H. Hyatt.

Professor C. E. Inglis, J. M. Irwin, H. G. Ivatt.

Sir Henry Mather Jackson, S. J. Jackson, T. W. Jacobs, J. E. James, A. A. Jamieson, G. B. Jenks, N. M. Jensen, C. Johnstone, Captain R. L. Jolliffe, J. H. Jolly, C. M. Jenkin Jones, S. T. Jones, Sir W. Benton Jones, W. J. Jordan, Sir Francis L'Estrange Joseph.

J. A. Kay, Robert Kelso, the Rt. Hon. Lord Kemsley, Colonel Norman Kennedy, Lt.-Colonel W. J. Kent, A. R. Kidner, R. Killin, Commander Stephen King-Hall, Geoffrey H. Kitson, C. Kunzle.

P. R. Laird, D. R. Lamb, Sir William J. Larke, Col. E. ff W. Lascelles, Charles Latham, Gen. the Hon. Sir Herbert Lawrence, Sir Walter Layton, W. E. C. Lazenby, F. J. Leathers, Charles E. Lee, Sir William Clare Lees, H. T. Leith, E. J. H. Lemon, F. A. Lemon, Lawrence Levy, Henry G. Lewis, Sir William Llewellyn, C. E. Lloyd, R. H. Bruce Lockhart, V. Warren Low, E. Lunt, W. R. Lysaght.

Duncan MacArthur, Sir Lynden Macassey, A. L. McColl, Malcolm S. McCorquodale, D. C. K. McCulloch, D. S. Macdonald, A. S. Macharg, J. W. Mackail, Colonel E. E. B. Mackintosh, Sir William McLintock, the Rt. Hon. James MacMahon, the Rt. Hon. Lord Macmillan of Aberfeldy, A. H. McMurdo, J. H. Maggs, Brig.-Gen. Sir H. Osborne Mance, W. J. Manclark, Henry Mansbridge, C. N. Mansfield, Colonel Manton, S. J. Marchant, J. Marchbank, A. G. Marsden, W. W. Marsh, Henry Martin, Lieut.-Commander H. J. Mason, Lt.-Colonel the Rt. Hon. the Viscount Massereene and Ferrard, Colonel Alan Maude, H. J. May, Brig.-Gen. Sir Henry P. Maybury, A. Maynard, Norman Meares, Wing Commander A. H. Measures, L. A. de L. Meredith, E. F. Merrett, A. Mertz, Captain C. D. Miller, P. H. Mills, Sir James Milne, Sir David Milne-Watson, W. F. Minnis, E. J. Missenden, P. G. Mylne Mitchell, Major H. Mitcheson, T. H. Moffat, the Rt. Hon. Sir Thomas F. Molony, Dr. H. E. Moore, Sir Charles L. Morgan, Charles H. Morris, F. D. Morris, the Rt. Hon. Herbert Morrison, the Rt. Hon. W. S. Morrison, G. Morton, W. H. Morton, H. V. Mosley, G. Mottashaw, Lt.-Colonel A. H. L. Mount, H. J. S. Moyses.

P. Nadin, Col. Sir Joseph Nall, Col. J. B. Neilson, W. A. Nell, G. H. Nelson, Air Chief Marshal Sir Cyril L. M. Newall, C. H. Newton, J. S. Nicholl, Francis Nicholls, A. W. Norman, Lord Mayor of Nottingham (Alderman J. Baldwin), Sir Walter R. Nugent.

Jos. O'Neill, Sir David J. Owen

Sir Archibald Page, C. G. Page, Handley Page, E. E. Painter, C. J. Palmour, H. A. Parkes, H. E. Parkes, S. E. Parkhouse, Hargreaves Parkinson, George Pate, James Paterson, J. C. Patteson, A. J. Pearson, Robert B. Pearson, R. C. Pearson, the Rt. Hon. the Earl Peel, Dr. Graves Peirce, Loughnan Pendred, Richard E. Pennoyer, J. N. Phillipps, C. Phizackerley, Frank Pick, Sir Robert Pickard, J. Pike, John R. Pinches, the Rt. Hon. Lord Plender, F. A. Pope, F. R. Potter, F. Povey-Harper, I. Buchanan Pritchard, Sir Arthur Pugh, E. Pugson, A. E. Pullar, J. Purves.

H. Quiggin, J. Quirey,

V. Radford, Sir James Rae, Dr. A. H. Railing, M.E. Railing, A. Raworth, Sir Alfred Read, H. G. N. Read, Halford W. L. Reddish, G. C. Rhodes, J. L. Richardson, Bernard Rickatson-Hatt, J. D. Ritchie, Alfred T. Roach, H. E. Roberts, Leslie Roberts, O. Glynne Roberts, S. Roberts, W. H. Roberts, Sir Henry B. Robertson, the Rt. Hon. Sir Malcolm A. Robertson, V. A. M. Robertson, A. T. V. Robinson, F. H. Robinson, J. H. Robinson, the Rt. Hon. Lord Rockley, R. J. Rogers, A. P. Ross, S. F. Rous, L. F. Rowlandson, T. W. Royle, H. Rudgard, the Rt. Hon. the Viscount Runciman of Doxford, Philip Runciman.

Councillor G. A. Watts (Mayor of St. Pancras), E. W. Salt, the Rt. Hon. Sir Lancelot Sanderson, S. Scarisbrick, J. B. Scattergood, Sir Joshua Scholefield, David Scrymgeour-Wedderburn, H. Gordon Selfridge, Robert Semple, R. A. P. Setterfield, Sir Albert Seward, H. Seydel, W. W. Sharp, J. Shearman, Charles Sheath, Lord Mayor of Sheffield (Alderman W. J. Hunter), Lt.-Colonel Sir Francis C. Shelmerdine, C. E. R. Sherrington, L. B. Shoppee, O. E. Simmonds, Captain W. L. Sinclair, H. L. Smedley, A. W. Smith, Bracewell Smith, Sir C. Herbert Smith, Sir Frank Smith, F. Smith, G. Royde Smith, Parker Smith, G. L. Smythe, the Rt. Hon. Lord Snell, Dr. Ernest Solly, Alderman Godfrey A. Solly, Thomas Somerset, Dr. Ing. Gerhard Sommer, Major Malcolm Speir, Councillor John Sperni, W. J. R. Squance, Lord Stamp of Shortlands, the Hon. Trevor Stamp, the Hon. W. Carlyle Stamp, J. E. T. Stanbra, W. A. Stanier, F. J. Stannard, Cav. Ing. Starace, A. Murray Stephen, J. B. Stephens, W. L. Stephenson, W. Tetley Stephenson, W. J. Stevens, Fred. C. Stewart, Wm. Stott, E. Raymond Streat, Sir Charles Stuart-Williams, His Grace the Duke of Sutherland, C. H. Sutherland, S. J. Symes, Gilbert S. Szlumper.

G. R. T. Taylor, Sir Gerald F. Talbot, T. L. Taylor, W. H. Telfer, the Rt. Hon. J. H. Thomas, Percy E. Thomas, T. E. Thomas, W. J. Thomas, Major S. J. Thompson, Sir William J. Thomson, H. L. Thornhill, Sir John E. Thornycroft, Sir Henry T. Tizard, Percy Toothill, Arthur Towle, Lieut.-Col. Sir Francis Towle, Geoffrey Towle, Major the Rt. Hon. G. C. Tryon, Walford H. Turner, A. Tylor.

D. C. Urie, George C. Usher.

The Hon. Samuel Vestey.

H. Carleton Walker, Sir Herbert A. Walker, A. C. J. Wall, Walter Wallace, W. K. Wallace, G. V. Wallborg, Joseph Ward, the Rt. Hon. Lord Wardington, Sir Lionel A. P. Warner, Sir Nicholas E. Waterhouse, F. C. Watkins, Dr. T. C. D. Watt, Sir Harold Webbe, H. B. Webster, Sir Ralph L. Wedgwood, Air Vice-Marshal W. L. Welsh, E. Wharton, Percy Wharton, W. K. Whigham, Duncan Whitehouse, F. R. B. Whitehouse, the Rt. Hon. Lord Wigram, Norman Wilkinson, Sir Evan Williams, Sir Thomas Williams, T. Williams, W. H. Williams, D. Williamson, Sir Horace J. Wilson, James Wilson, Sir Murrough J. Wilson, Sir Frank Wiltshire, D. F. Winch, the Rt. Hon. Lord Wolverton, Si'

William V. Wood, W. Wood, Alfred Woods, W. S. Wreathall, Colonel Sir Charles Wright, Wing Commander J. A. C. Wright.
H. James Yates, W. Yeaman, Lt-Colonel the Rt. Hon. the Viscount Younger of Leckie.

The Duke of Gloucester Proposes the L.M.S.R.

The Duke of Gloucester, in proposing the toast of "The London Midland and Scottish Railway Company," said that he was glad to be present to celebrate so important and historic an occasion. The story of railway development in its early days was a fascinating subject, for the coming of the steam locomotive altered the whole aspect of human life and the whole course of civilisation. Until that time the greater part of the population was virtually immobile and few persons strayed further than ten miles from their home. In 1825 the *Quarterly Review* ridiculed the possibility of travelling twice as fast as heretofore and described such projects as "visionary schemes unworthy of notice." This of course was the year of opening of the Stockton & Darlington Railway. Objections to railways in these early years were raised on improbable grounds, and in unexpected quarters. For example it was contended that fox hunting and the entire race of horses would shortly cease to exist. His Royal Highness also recounted the story of a reverend gentleman who demanded and obtained handsome compensation from the London & Birmingham Railway on the grounds that the course of the line would pass near his house and that his daughters would be exposed to the unhallowed gaze of the construction gangs. When the Great Western Railway was planning its line from Paddington to Bristol, public attention was drawn to the disastrous effects it would have on the health and morals of Eton College, and the Duke of Cumberland opposed the Bill in the House of Lords on the grounds that the railroad, even from the distance of Slough, would be very disturbing to the Eton boys. "As an Old Etonian," added the Duke, "I am obliged to admit that at any rate in the 'thirties Harrow and Rugby seem to have been made of sterner stuff, because, though your line from Euston was to skirt the foot of Harrow Hill and pass through the town of Rugby, there is no record of a protest from either of these schools, and indeed we are told that Dr. Arnold, the Headmaster of Rugby, stood on the platform to cheer the first train through.

Royal Association with West Coast Route

"It was in 1842 that my great-grandmother, Queen Victoria, ventured on her first railway journey, from Slough to Paddington, and when she said she enjoyed it many of her loyal subjects were profoundly shocked. Tributes were paid in the press to the precautions taken by the directors of the line and to the Queen's courage, but it was plainly suggested in so many words that Her Majesty's person should not be subjected to such risks, and that Royal railway excursions should either be abandoned wholly or resorted to only very occasionally. During the next few years public opinion became more or less reconciled, and in 1848 Queen Victoria travelled for the first time by train from Balmoral to London taking two days on the journey and spending the night at Crewe; thus initiating the long and uninterrupted association of my family with your great system."

Speaking of the building of the London & Birmingham Railway—the first main line between London and the industrial Midlands—the Duke said that a hundred years ago it was hailed as the greatest engineering wonder of the age. Its construction was carried out by Robert Stephenson, and it was worthy of note that Stephenson covered the distance between London and Birmingham on foot no fewer than 20 times. Today the successor of that early enterprise was the L.M.S.R. which represented a total capital expenditure of £456,000,000; last year the company carried no fewer than 330,000,000 passengers.

The traditions on which the London & Birmingham Railway was based had continued to inspire the company throughout a century of amalgamation and progress, and now as Britain's largest railway it could point to a record of public service of which all might well be proud. To constantly changing needs the company had adapted itself with remarkable flexibility. As but one instance of this, the Duke referred to the work of the Research Department which undertook such multifarious duties as accurately assessing the value of new types of steel; examining and running new types of vehicle; and conducting investigations into corrosion, wind pressure, lighting and heating, and the durability of fabrics and furnishings. This work was due largely to the foresight of Lord Stamp in recognising the value of scientific research in dealing with the company's problems. Today the enormous activities of the L.M.S.R. included running ships and hotels, undertaking catering on a large scale, and having substantial interests in road transport.

Lord Stamp's Reply

Lord Stamp, in responding, said he must first express the gratitude felt by that great company towards His Royal Highness for the honour he had done them in attending this banquet, and proposing the toast in such gracious and eloquent terms. It was gratifying that this occasion should be the first public appearance after his travels. His Royal Highness had referred to the long association of the L.M.S.R. with the railway journeys of the Royal House, and his presence that night set the seal upon one of their most treasured traditions. An occasion like that was not without its critics. They said the L.M.S.R. was a modern conglomeration, and its antecedents had lost all claim to independent recognition. The Stockton & Darlington anniversary was indeed a distinct and distinguished event. The actual beginning of the L.M.S.R., namely, the Liverpool & Manchester, with its epic of Chat Moss, the Rainhill trials, the *Rocket*, and the Huskisson tragedy, was adequately celebrated in those cities some years ago. It seemed that the opening of the first throughout line to Birmingham for the great industrial North, from "the Gateway," Euston, was equally worthy to be commemorated, and it would have been a failure of our duty if it had been passed by in silence. The directors therefore welcomed the presence of the guests at that 100th birthday party, and made no apology because it happened to fall in a time of difficulty and depression. When all were anxiously re-analysing the factors that made for national self-consciousness, solidarity, and purpose, it was felt that *a sense of history* might not be the least of them. The popularity of the historical play, film, and pageant seemed to show that this sense was getting wider and deeper. Continually we celebrated by "praising famous men and our fathers that begat us," but we could really do so only by the institutions they created and the events in which they took part.

Individuals in private business establishments could have their celebrations without criticism, but it might be said that with joint stock companies owned by disparate shareholders, such junketings had no meaning. But as the forms of business passed more and more into the hands of corporations, if the old private obligations of civic pride, of large charity, and of historic interest did not pass over with them, these features would disappear from society. Those who bemoaned this evolution often said that the company or corporation had no soul. This would indeed be true if it did not inherit these finer duties and privileges. Moreover, the pride of the institution was today as great a factor in life as ever it was, and those who spent their lives of work by hand and brain in some great business could rightly be inspired by its record and its history, and share in its intangibles. A sense of history could not be got by the masses objectively. History, like charity, began at home, and like honesty, it might even be also, from the stockholders' point of view, the best policy.

The Appeal to the Imagination

It was clear that railways still had a strong appeal to the imagination. At the recent exhibition at Euston, over 27,000 people actually paid for their handbook of admission, and in Birmingham in a week over 25,000 visited the show. The *old*, perhaps, were there by sentiment; but the appeal to the *young* did not seem to diminish. Although there were so many rival mechanical attractions, the evidence on all sides was that railways had an undiminished fascination. Fifty-four schools round Birmingham visited the exhibition in a week. He (Lord Stamp) told the Duke (an old Etonian) that he had visited Harrow School a short time ago, and found the boys belonging to the school railway club with an im-

pressive property, and he was called upon to open an extension of the model establishment, giving access to a wonderful variety of viaducts, tunnels, and operating perils. Every boy had some position, from porter to general manager, and promotion was eagerly sought. In his own youth allegiance to Oxford and Cambridge formed the dividing basis for all kinds of contests, but here at that school they were in two great parties, either L.M.S.R. or G.W.R.—curiously enough the school was on the L.N.E.R.

The lines that formerly showed the prowess of steam, now bore three distinct rival forms of traction—electricity, diesel, and steam, and the old one showed its vitality, for despite all the fixed limitations of height and width, the steam locomotive had in the last few years made more advance in power and economy than during several decades prior. In view of present difficulties and the troubles ahead, no one would grudge a moment or two spent in taking stock of the courage and resourcefulness with which our forbears faced theirs—we might even be the better for it. The history of the industrial revolution had rested so far mainly on aggregate figures of production and trade, and biographical individuality had been absent. The early Victorian era was an age of great beginnings, and in the centenary volumes now pouring forth we were getting the biography of business, some day to yield to the social historian, generalisations of great value in a hitherto neglected field, to learn inductively the why and wherefore of survival, through trade cycles, depressions, and epic change. The old man of the village when asked to explain his great age, said, " I always notice if I lives through April I lives to the end of the year," and many a business would give no better answer. Now we have London University and Harvard fathering societies for the preservation of business archives, busy listing the old ledgers and letter books of City houses that twenty-five years ago were lumber or private curiosities.

When Prussia sought British Advice

The presence of Dr. Dorpmüller, continued Lord Stamp, gives him, personally, a special pleasure, as he was present at the great centenary celebrations of the German railways in Nuremberg two years ago, with their imposing and enormous pageantry, and he (Lord Stamp) had always been an admirer of the great system over which Dr. Dorpmüller presided. It might be news to him to know that just over a hundred years ago the Government of Prussia, hearing of the very judicious and effective management of the London & Birmingham Railway, wished to copy it. He had in his hand the actual letter, dated June 26, 1838, in the copperplate writing of the period. Prussia wanted to know how the L. & B. secured order and safety and in what manner its officers were remunerated and held responsible. The anxious desire of that Government was to legislate in the most efficient manner on a subject of such vast magnitude and public interest. Dr. Dorpmüller and the German Ambassador knew very well that while we were never presumptuous enough to *offer* advice nowadays, we were always anxious to share with them all information on research and technical questions which was of mutual interest. The presence of both these gentlemen was particularly gratifying that night.

While on the subject of efficiencies and dipping into the past, Lord Stamp said that apparently Mr. Quartermaine of the famous Ship tavern at Greenwich, had also heard of " our efficient management." He wrote to tell the L. & B. that the whitebait season had commenced and solicited further support. Thoughts of the *tavern* led on by an easy stage to a letter from Burton-on-Trent, which shows that Bass & Company were amongst the railway company's earliest friends, and as such had an unchanged relationship for a whole century, but, like most friends, they wrote asking for a reduction of rates, quoting against the railway indeed, not road transport, but the contemporary *canal* rates.

As a souvenir, a volume entitled " Old Euston " would shortly be passed round. It had been specially prepared for this occasion by the company's own archivist and historian, Mr. G. Royde Smith, the Assistant Secretary, and had a literary flavour not unworthy of all associated with that name. The makers of Old Euston one hundred years ago struck a commemorative medal, and today, keeping its motif, the L.M.S.R. was following the example, and thus be enabled to reply in kind to the various complimentary tokens of the sort received from abroad of late years. Lord Stamp asked His Royal Highness to accept the first specimen struck.

In the L.M.S.R., with its 460 millions of capital and a personnel of a quarter of a million people, directly and indirectly co-operating therewith, one was often impressed by the immense fund of traditional and family loyalty, and there was also the widest scope by the very character of its many operations on land and sea for individual acts of heroism, initiative, and merit. These acts of bravery or exceptional devotion and resourcefulness often fell outside any of the general channels of recognition and the company was instituting in this centenary year a centenary medal, by the award of which from time to time it was hoped to recognise such instances of signal merit, for " Peace hath her victories no less renowned than war," and the award would moreover be surrounded by every circumstance of dignity and formality that would indicate the serious spirit lying behind it.

Personal Links with the Past

A feature of that gathering which gave particular pleasure and interest was the presence of so many who furnished historic links with those early days. There were present Alderman Godfrey A. Solly, of Birkenhead, and Dr. Ernest Solly, of Harrogate, great-grandsons of Isaac Solly, who was the first Chairman of the London & Birmingham Railway. These were connections the interest of which it would be difficult to exaggerate. Mr. S. R. Beale, who was to speak presently, might perhaps say something of the striking share his own forbears had as pioneer stockholders. The energetic L.M.S.R. Director, Sir Ralph Glyn, was the grandson of George Carr Glyn (afterwards Lord Wolverton), Chairman of the board one hundred years ago, while the present Lord Wolverton and Sir Richard Glyn, the head of the family, were also present. Their illustrious ancestor (whose presiding spirit he felt might be just behind him) presided in real earnest. One hundred and one years ago George Carr Glyn drew up regulations for the Goods Department. His writing was not too easy to read, but it was gathered that he reserved to himself power to call for the dismissal of any obnoxious servant. The engagement was with a Mr. Baxendale, as agent, on a yearly basis. This connection soon came to an end, but in a century the wheel had come full circle and his brother's grandson, Mr. Guy Baxendale, present that night, was on the board of a great road transport company which was now owned by the railways. George Carr Glyn was a stirring person to read about, as indeed were so many of those days. The historian of those times depicted his chairmanship in terms which might do good to the many chairmen of companies present:

" When the dark hour was on railway property, he stimulated hope and soothed depression. When balance sheets were menacingly demanded; when accounts were examined with audacious eagerness; when men watched his look as he entered the room, and hung on his words as the words of their oracle; he met that mixed tumultuous throng with a countenance as decided and a brow as unruffled as when he had delighted their willing ears with premiums and amalgamations. The proper place to see Mr. Glyn is as Chairman in that noble room, with an earnest multitude around him, with the representative of every class and caste before him, with Jew and Gentile ready to carp at and criticise his statements, he yet moves them at his pleasure and leads them at his will. And perhaps the ascendancy of one man over many is seldom more agreeably seen than when, standing before a huge expectant audience, he enlivens the platitude of one with some light epigrammatic touch, answers another with a clear tabular statement, or replies to a third with some fallacy so like a fact that the recipient sits contentedly down, about as wise as he was before."

" The Guests "

The toast of " The Guests " was proposed by Mr. Edward Brocklehurst Fielden and seconded by Mr. Samuel Richard Beale, while the Minister of Transport (The Rt. Hon. Leslie Burgin) and The Rt. Hon. Viscount Greenwood responded.

Mr. Fielden said that a hundred years ago, when the London & Birmingham Railway was opened, it was described

as "unquestionably the greatest national work ever completed in ancient or modern times." Passengers were requested not to stand in the carriages or wagons, but to sit on seats or on the floor. Today the company's request was the more modest one of asking its passengers not to put their feet on the seats. As exemplifying the progress in the speed of travel for which railways were mainly responsible, Mr Fielden instances the case of Sir Robert Peel who was summoned to England from the south of Europe over a hundred years ago. He travelled post-haste but his progress was no greater than that of Constantine from York to Rome some fifteen hundred years earlier. A century ago many looked upon railways with horror, and some still longed for days that had gone, but great progress had been made, and it was to be hoped that this progress had not come to an end. Sydney Smith wrote "Every accident on a railway is an advantage that leads to an improvement," and added that what was wanted was an accident to kill a bishop or at least a dean. Today we strived after perfection by less violent means.

Mr. Beale remarked that in the original subscription list of the London & Birmingham Railway, which was recently exhibited at Euston, there were included the names of no fewer than 14 of his ancestors. His uncle was the first secretary of the Liverpool & Manchester Railway and devised the multitubular boiler which contributed so greatly to the success of the *Rocket* at the Rainhill trials. It was less well known that he was one of the earliest advocates of the adoption of universal time. Mr. Beale spoke of the pleasure felt at the presence of the Belgian Ambassador, the German Ambassador, and Dr. Dorpmüller, the Reich Minister of Transport. Regarding our friends from Germany, he thought perhaps they had come there to thank the company for having sent them many years ago a model of a travelling post office. Mr. Beale also mentioned the work of Dr. Leslie Burgin, our own Minister of Transport, and remarked that Gladstone was really our first Minister of Transport and was responsible for the Railway Act of 1844. What Gladstone really did say in 1844 was that it distressed him "to see violent competition owing to fundamental misapprehensions."

The Minister of Transport would like L.M.S.R. Capital!

Dr. Burgin responded in a humorous speech in which first of all he thanked Mr. Beale (who is the Chairman of Guest, Keen & Nettlefolds) for his kindly remarks and said that as guests they were "all Guest Keen." He then spoke of technical co-operation with Germany and said that a few minutes earlier, when the pipers were in the room, he thought he noticed both the German Ambassador and Dr. Dorpmüller examining the bagpipe to see where was the camshaft and where the inlet valve. Dr. Burgin continued that it excited him to learn that the L.M.S.R. possessed a capital of £460,000,000. "Give me that," he said, "and I will put the whole of the Bressey Report into execution at once!" The L.M.S.R. was the greatest non-Government commercial undertaking in the world, and everyone admired its transport system, but nevertheless he found it difficult to forget that it was presided over by "Stamp of Shortlands" and that Shortlands was on the electrified system of the Southern Railway. Whenever possible, the L.M.S.R. was always willing to place its talent at the services of others, and he recalled with gratitude the loan of Mr. Lemon to the Air Ministry, and of Messrs. Stanier and Cox to a great Indian state railway.

Speaking of the relationships between Great Britain and Germany, Dr. Burgin referred to the pioneer work of Friedrich List, who was born in 1789 and inspired the building of the Ludwigsbahn between Nuremberg and Fürth. Nevertheless when a locomotive was required for this line, the promoters bought a 15 h.p. engine, *Der Adler*, from Stephenson of Newcastle, and also secured the services of a first-class engineman named Wilson. Moreover, so highly did they value the services of their British technical adviser that Wilson was paid a salary of 2,250 marks a year, whereas the general manager of the railway received but 1,360 marks. Again, when a locomotive was required for a railway between Leipzig and Dresden, it was built at Bolton in Lancashire at a cost of 1,383 marks, which the speaker hoped he would not be asked to convert into sterling at the rate of 12·50 marks to the £. In conclusion he could see no better way of cementing relationships between Great Britain and Germany than for the latter to place more orders for railway material in this country!

Lord Greenwood said that possibly he had been asked to reply also because he represented both fares and freight. He believed that railways were indispensable in the times of peace, and in war they would prove even more so because of their reliance on coal—our one home-produced fuel. He congratulated Lord Stamp on having carried out one of the most successful items of propaganda in sending the Royal Scot train to Canada and the U.S.A. A hundred years ago Canada had just recovered from rebellion and the U.S.A. hated us with great ferocity. It was impossible a hundred or even fifty years ago to have imagined our King and Queen visiting North America.

In the course of the evening, the guests were presented with copies of a handsome historical book entitled "Old Euston" which has been produced by Mr. G. Royde Smith, Assistant Secretary of the L.M.S.R. We review this book on page 857.

HISTORY OF THE STEAM TRAM.—The Railway Club welcomed Dr. H. A. Whitcombe at the monthly meeting held on November 3 last at the Royal Scottish Corporation Hall, Fetter Lane, E.C. In the course of a paper entitled "The History of the Steam Tram," Dr. Whitcombe traced the origin of tramways from legendary times, through the Stuart period, and up to the first use of iron rails at Colebrookdale. True tramways in the modern sense dated from the opening from New York to Harlem, followed by the Paris trams. The lecturer stressed the fact that the reputed first trams in England, at Birkenhead in 1860, were preceded by Curtis's tram in Liverpool a year earlier. Reference was made to the rapid development of the early seventies, from the appearance of the first steam tram in 1872. Steam trams were, however, short-lived, the majority lasting only from about 1881-1882 to 1901-1902; the most extensive system was in the Birmingham district. In describing the locomotives, Dr. Whitcombe pointed out that many of their early imperfections were due to the limitations of the Tramways Acts, but the firm of Kitson perfected the tram engine and altogether built over 300 of them. The paper was illustrated with lantern slides.

VASSAR-SMITH AMBULANCE COMPETITION, GLOUCESTER.—The twenty-first annual competition for the Vassar-Smith ambulance shield, open to teams of the Great Western Railway Gloucester Combined Corps, was held at the Northgate Mansions Ballroom on Saturday, October 29, when six teams participated. The test set by Dr. F. H. Sprague, who adjudicated, was an ingenious one, and elicited both skill and judgment from the competitors. Mr. W. S. H. Williams, Divisional Superintendent, presided over the subsequent presentation proceedings, and was supported by Mr. H. Leslie Boyce, City Member, and Mrs. Boyce, Mr. L. O. Need, Town Clerk, Mr. L. J. A. Callaway, District Goods Manager, and Mr. H. S. B. Whitley, Divisional Engineer, Wolverhampton. The result of the contest was announced as follows:—

1.	E. Team, Captain J. B. Bloomfield	80 marks
2.	B. Team, Captain A. Lander	71 ,,
3.	F. Team, Captain W. E. Haynes	65 ,,

The trophy was presented to the winning team by Mr. Leslie Boyce, and individual prizes by Mr. Need. Dr. Sprague, commenting on the good work done, expressed pleasure at seeing so many teams captained by young men. Gold efficiency medals and bars were also distributed by Mr. Need, who said the Combined Ambulance Corps was commenced in Gloucester in 1889, since when over 4,320 awards had been obtained. The present membership was 120. Examination awards were distributed by Mrs Leslie Boyce.

Retired Railway Officers' Luncheon

(*See editorial note on page* 851, *and illustration on page* 877)

An attendance of over 140, including 71 guests, constituted a record for the autumn luncheon of the Retired Railway Officers' Society, held at the Charing Cross Hotel, W.C.2, last Tuesday. Sir Ralph L. Wedgwood, C.B., C.M.G., Chief General Manager of the L.N.E.R., was the principal guest. Members, their guests, and guests of the society present were:—

Guests of the society: Sir Ralph L. Wedgwood, Sir Herbert Walker, Messrs. E. E. Painter, W. A. Stanier, G. Cole Deacon, J. A. Kay, D. R. Lamb, Dr. Grant MacMahon, Messrs. L. F. Rowlandson, G. Marshall, Percy Syder, F. R. Potter.

Members of the society: Mr. S. L. Murgatroyd, Lt.-Colonel Sir Chas. Morgan, Messrs. H. J. Guest, J. Pike, F. Ruffell, Major Jas. Petrie, Messrs. H. Thompson, C. W. Edwards, Lt.-Colonel J. S. Wilson, Messrs. R. Rowbottom, H. J. Burcham, J. F. Gee, W. A. Thomas, A. H. Bull, W. J. Clayton, E. A. Clear, W. H. Hyde, T. H. Shipley, J. Williams, E. W. Mauger, A. C. Cookson.

Messrs. W. H. J. Pyne, A. White, A. R. Cooper, L. C. Geach, E. D. Grasett, Lt.-Colonel E. C. Cox, Mr. F. A. Sargent, Lt.-Colonel Michod, Messrs. A. Walker, W. E. James, E. Prebble, W. J. Venton, A. W. Willet, J. H. Woodhead, T. Martin, A. S. Mills, H. Ferguson, R. E. L. Maunsell, J. W. Faulkner, J. W. Lovejoy, W. R. Jones, J. F. Brook, F. S. Bridge, W. E. Bradbury, S. F. Johnson, G. J. Walker, Ald. G. G. Senior.

Messrs. J. H. Follows, R. H. Nicholls, F. W. Tyler, A. C. Stamer, J. B. Rogers, H. W. C. Drury, R. Killin, A. Wood Hill, A. W. Arthurton, F. W. Dingley, Major W. E. Thornhill, Messrs. J. F. Bradford, J. R. Morris, J. Roughton, H. R. Campfield, D. Poyntz Ricketts, A. Oldham, A. F. Dymant, Major J. H. Smeddle, Messrs. T. Procter Smith, A. Puleston.

Members' guests: Messrs. R. J. M. Inglis, C. J. Selway, D. C. McCulloch, A. L. Castleman, P. F. Pike, H. E. Horne, S. Roberts, H. E. Machin, A. E. Moore, Major A. Clear, Messrs. F. K. Pelley, P. G. Mauger, W. H. Humphrey, A. S. Quartermaine, E. C. Cookson, E. J. Missenden, H. E. O. Wheeler, J. B. Elliot, W. M. Perts, W. Yates, C. Phizackerley, Mr. Barriball.

Messrs. A. James, C. H. Coe, T. W. Jacobs, F. W. Tipton, W. D. Duffield, Major L. F. S. Dawes, Messrs. F. W. Lampitt, H. J. Hoskins, A. F. Bound, M. H. Brady, W. P. Bradbury, H. J. Comber, Mr. Darbille, Messrs. A. Maynard, H. W. Payne, T. W. Royle, H. Wheeler, K. Kerr, W. R. Charlton, J. R. T. Williams, F. Russell, J. Shearman, O. Stephens, W. R. S. Morris, J. B. Scattergood, R. G. Gibson, A. R. Dymant.

Mr. S. L. Murgatroyd, O.B.E., M.Inst.C.E. (President of the society), after the loyal toast had been honoured, proposed "The Guests." He had, he said, to refer to one absentee who had been a very great friend to the society—namely, Mr. Ashton Davies (Acting Vice-President, L.M.S.R.). Mr. Ashton Davies had accepted an invitation to attend, but unfortunately a day or two later had been taken seriously ill with typhoid fever. The latest news was that he was progressing as well as could be expected, and he (the President) was quite sure one and all would wish him a speedy recovery. The Secretary would convey to Mr. Ashton Davies the good wishes of the society. The President then referred to the international situation and its repercussions upon the railways, which he wished were in as good a position as their society, for even after the luncheon and, he hoped, a ladies' tea in the early part of next year, they would show an increased accounts balance.

Sir Ralph L. Wedgwood, replying to the toast of "The Guests," thanked the society for its hospitality. He said the railways had struggled out of a world emergency for a breathing space, only to be plunged into a road-rail controversy. In the road-rail shindy they got advice and abuse and even sympathy as mixed as in the latest American cocktail, and advice predominated.

After a humorous dissertation on the various classes of reply to critics of railway management, he referred to the suggestion by the press that the railways could cure their misfortunes if they amalgamated—if, like the line from "Land of Hope and Glory," they made themselves "mightier yet." They had, in fact, amalgamated 16 years ago, and had made the four great main lines of the country into united and harmonious concerns. The constituent companies were like the components of the British Empire, all keeping their own traditions yet making a very united whole. They had built up magnificent organisations, and he asked that they should not have to be scrapped for the sake of comparatively small savings. Was it not better to let the tree grow a little longer before they took up its roots? Nationalisation might come; but let there be no half-way house—no forming of the railways into units which would leave them too big to be popular, too mixed to be happy, and just as much fettered as ever in their competition with the roads.

Mr. W. A. Stanier, Chief Mechanical Engineer, L.M.S.R., proposing "Success to the Retired Railway Officers' Society," explained that he was taking the place of the most experienced after-lunch speaker on the L.M.S.R. (Mr. Ashton Davies). He hoped the society would continue a success, for the time was coming when he would have to stand as a candidate himself. Mr. J. A. Kay, Editor of THE RAILWAY GAZETTE, seconded the toast.

Lt.-Colonel E. C. Cox, C.V.O., C.B.E., T.D., replied to the toast, recalling that the society was nearly 40 years old, but had not lived out its useful career.

Mr. E. A. Clear proposed the toast of "The President," and Mr. S. L. Murgatroyd briefly replied.

STAFF AND LABOUR MATTERS

Railway Wages

The Railway Staff National Council met in London on Monday, November 14, to consider the claims of the National Union of Railwaymen, the Associated Society of Locomotive Engineers & Firemen, and the Railway Clerks' Association, but no agreement was reached on the claims submitted. The next and final stage in the negotiating machinery is the Railway Staff National Tribunal, and presumably the three trade unions will now refer their claims to that body for decision. It is understood that the executive of the three railway trade unions will hold a joint meeting on November 23 to consider the matter.

Wages Reductions for Meals

By a majority the Court of Appeal on November 3 allowed the appeal by Cook, Son & Co. (St. Paul's) Ltd. from the decision of Mr. Justice Wrottesley, in the King's Bench Division (as recorded in our issue of February 18 last) that they had made deductions from the wages of Arthur Pratt, formerly employed by them as a packer, contrary to the provisions of the Truck Act of 1831. Lord Justice Slesser, who heard arguments with Lord Justices Finlay and Goddard, announced that the majority of the Court was in favour of allowing the appeal. The reasons, he said, would be given later. The reasons for the court's decisions were given on November 11. Lord Justice Slesser said it seemed to him to be impossible to come to the conclusion that this was a case of deduction. He thought the intent of section 23 of the 1831 Act was that nothing in that Act should render illegal a contract to give food of the kind defined in that section in addition to money wages, as remuneration for services. Lord Justice Finlay agreed. Lord Justice Goddard, dissenting, said that in his opinion the combined effect of sections 1, 3, and 23 was that the employer of a manual labourer must pay wages in money and not in kind. Leave to appeal to the House of Lords was granted.

Hours of Road Motor Drivers

The Institution of British Launderers Limited, and the Associates Committee of the British Road Federation Limited, have made applications to the Minister of Transport for an Order varying the hours of drivers of "C" vehicles during the 1938 Christmas trading period. The variation applied for is to the effect that the period of 11 hours laid down in Section 19 (1) (ii) of the Road Traffic Act of 1930, may be increased to 12 hours on not more than two days in each of the three weeks ending on December 17, 24, and 31, 1938, the variation to apply only to drivers of vehicles whose use is authorised under a "C" carrier's licence granted under Part I of the Road & Rail Traffic Act, 1933. The applications suggest that any Order made should be of a permanent nature applicable to successive Christmas seasons. The applications will be heard by the Industrial Court on Tuesday next, November 22.

QUESTIONS IN PARLIAMENT

Overcrowded Trains

Sir Richard Meller (Mitcham, U.), on November 10, asked the Minister of Transport, whether his attention had been called to the serious overcrowding of trains from Wallington, Waddon, Carshalton, and Hackbridge, to London and back at certain times of the day; and whether he would consult with the Southern Railway Company with a view to an improvement of the existing conditions.

Dr. Leslie Burgin (Minister of Transport): I have received no complaints regarding the Southern Railway services between London and the stations mentioned. I have, however, sent a copy of this question to the company for its observations, which I will in due course communicate to my hon. friend.

Trespassers Killed on Southern Railway

Brigadier - General Clifton Brown (Newbury—C.), on November 16, asked the Minister of Transport how many fatal accidents had occurred to people from contact with the live rail on the Southern Railway since December, 1937; and how many miles of the new protective fencing had been completed since the same date.

Dr. Leslie Burgin (Minister of Transport): Five members of the public, all trespassers, have been killed in this way since the end of December, 1937. Of the new protective fencing 42 miles have been erected since that date.

North China Railways

Mr. J. C. Hannah (Bilston—C.), on November 16, asked the Prime Minister whether he was satisfied with the reply received from the Japanese Government in July as to the effect of the reorganisation by the Japanese of the Peking-Mukden and other railways in North China upon British rights and interests in these railways.

Mr. R. A. Butler (Under-Secretary of State for Foreign Affairs): No, Sir. His Majesty's Ambassador at Tokyo made further representations on September 3 urging that the British rights deriving from the Agreements of 1898 and 1902 should be restored. The reply of the Japanese Government is still awaited.

Communication Between Burma and China

Mr. Hamilton Kerr (Oldham—C.), on November 16, asked the Prime Minister whether, in view of Japan's action in hampering foreign trade carried on by sea on the East of China, the British Government would pay increased attention to the importance of railway communication between Burma and south-western China and would co-operate with the Chinese Government, which had now the matter in hand, in constructing both a road and a railway which would carry British exports free from Japanese interference.

Mr. R. A. Butler: It is hoped that an all-weather road from Lashio to Yunnanfu will be open to regular traffic shortly. The practicability of constructing a railway is, I understand, now being examined by the financial interests concerned.

Atmospheric Pollution in Liverpool

Mr. B. V. Kirby (Everton—Lab.), on November 16, asked the Minister of Health whether, in relation to replies he gave to the honourable member for Everton on November 18, 1936, and June 21, 1937, he would state what steps were being taken by the Corporation of Liverpool to reduce and overcome the smoke nuisance in Liverpool, particularly in the central and northern areas where it was a menace to property and health; and whether the L.M.S.R. had yet reported upon, or in any way co-operated with the corporation, in an effort to overcome the smoke nuisance due to rail traffic in the central area.

Mr. R. Bernays (Parliamentary Secretary to the Ministry of Health): I am informed that the nuisance from manufacturing smoke in Liverpool has been considerably mitigated by the activities of the special smoke staff of the Corporation. As regards the second part of the question, I am informed that a conference is taking place today in Liverpool between representatives of the corporation and of the railway company, on data which have now been collected.

Cross-channel Services from the Passenger Viewpoint

Mr. A. C. Hardy, B.Sc., read a paper on "Cross-channel Services from the Passenger Viewpoint" to the Institute of Transport on November 14. The present year, he said, from the point of view of the ship-building historian, was a cross-channel ship year and might well go down to history as one in which more attention was directed to the design of these extremely difficult craft than ever before. Yet with passenger ship design and construction in the advanced position it occupied today, no branch of that section of naval architecture offered more varied and unpleasant contrasts than did the cross-channel services.

Mr. Hardy suggested that in future open deck spaces on day and night service craft would have to be abolished as far as possible, and with this and other improvements would have to go an overhauling of embarkation conditions ashore. The guilt in this respect was shared equally by foreign railways and our own, and the only real maritime cross-channel station with covered embarkation in existence, was the L.M.S.R. station at Holyhead, the finest of its kind in the world.

Examination of plans justified the assumption that only in one case in the last ten years had ships under the British flag been designed internally from first principles, and these vessels operated in the Irish Channel, so that they did not represent the country as ambassadors of commerce on any of the important international routes. Mr. Hardy enumerated various desirable characteristics of cross-channel vessels including: high speed—18 to 25 knots—on modest dimensions under 400 ft., 4,000 tons displacement and shallow draft (under 16 ft.); great weather-worthiness to enable maximum service speed to be maintained in all but the worst of weather, without damage to superstructure or discomfort to passengers; high power in small space, cross-channel machinery (steam or diesel) should not exceed 7 h.p. per ton displacement; great manœuvrability at full speed for handiness (the Irish Channel motorships were exemplary in this respect); ability to navigate astern at speed for long distances; to repeat railway comfort afloat on the day services and to do so on the night routes with many of the amenities of a first class hotel added; capacity for general cargo and mail in varying degrees, for which quick loading facilities must be available.

After reviewing vessels at present in service, Mr. Hardy devoted a section of his paper to "What the Passenger Wants," and foresaw the day service ships of the future as "a democratised series of floating saloons with perhaps half a dozen railway sleeper type cabins on the upper deck and open berth sleeping cabins below the main deck fore and aft of the machinery for use in the worst of weather." Restaurant facilities, he added, could well be reduced; in the first place because restaurant car and/or Pullman facilities were usually available in the best train connections at each end; in the second, because weather conditions soon drove the nervous passenger away.

As for the night routes, a cross-channel night service ship should be a floating dormitory and not a trans-Atlantic liner in miniature. Such ships, like hotels, whose moving annexes they were, carried a peak load partly in the dining saloons, mainly in bars and public rooms, from an hour before sailing time to two hours after leaving, and on some routes, notably the Antwerp and Irish Channel, in the dining saloon in the morning. Such spaces, therefore, must be compact, accessible, and economical to operate. For the same reason the cabins must be miniature hotel bedrooms, with hot and cold running water, beds, good clothes-hanging space, bunk reading lights, adequately-warmed and ventilated.

Mr. Hardy in conclusion expressed the hope that the railway company, which had done so much on land in recent years to combat the menace of the car and the coach, would do everything at sea to meet the development of a rival which already existed, the aeroplane, which had established a grip upon every-day transportation.

RAILWAY AND OTHER MEETINGS

Argentine Great Western Railway Co. Ltd.

The ordinary general meeting of the Argentine Great Western Railway Co. Ltd. was held at Winchester House, Old Broad Street, London, E.C., on November 15, Mr. J. A. Goudge, Chairman of the company, presiding.

The Secretary (Mr. C. Ellison Rich) read the notice convening the meeting and the auditors' report.

The Chairman, in moving the adoption of the report and accounts, said that before reviewing the results he had with the greatest regret to refer to the death of their leader, Lord St. Davids, who for so many years had led their affairs with such distinguished ability. The report showed the amount of debenture interest which they had been able to distribute as being received from the Buenos Ayres & Pacific Railway. He did not propose to dwell on the general conditions in Argentina as he had dealt with the matter fully in his speech to the Buenos Ayres & Pacific shareholders last week, which had been circulated to all the stockholders of this company.

The main point was that the heavy decrease in cereal business throughout Argentina naturally resulted in reduced purchasing power for the products that the Argentine Great Western carried. Though that was not a serious matter, it was a continuing one; there was still less money being spent on such commodities as wine, which was their great traffic. The point of the report, apart from that, was that the moratorium was renewed with the agreement of the debenture holders' committee at meetings of the stockholders concerned. They still had to deplore the large amount of exchange loss which was being sustained on remittances from Argentina. On that point, since the meeting of the Pacific company they had seen that an additional 6 per cent. was likely to be the result of the further depreciation of the peso. He might, however, add that they hoped that the Government would be able to take some measures which would relieve the railways in their desperate plight; otherwise they would be coming, he was afraid, to the end of their financial resources. Last year Lord St. Davids referred to the possibilities of a rearrangement of capital. They were amassing a very large amount of accrued debenture debt. The prospect of some rearrangement had come one year nearer. But the board was not yet in a position to lay any sort of scheme before the stockholders. It was obvious that they could not go on spending money—which had been hitherto supplied by the Buenos Ayres & Pacific company—without some possibility of issuing capital. The company owed the Pacific company over £550,000, and, of course, that would naturally be a matter to be taken into account when any rearrangement of capital took place.

In the capital account of the company for this year there was a considerable expenditure of over £155,000; the explanation was that it was necessary for the development of their business that certain rolling stock and wagons for both wine and fruit should be supplied.

Passing from the general conditions to the special conditions of the Argentine Great Western, they had had, in spite of crop losses, a steady growth of goods traffic for a long number of years—it ran into about 100,000 tons per annum. That was important because it meant that apart from cereal troubles the business dealt in by the company was continually expanding. On the point of the receipts and earnings from that traffic, however, the picture was not so good. He would not like to say that last year the company earned one cent more in money from the additional traffics.

As regards passenger business they had had to note a very severe loss. Fifteen years ago the company carried nearly 2,000,000 passengers on its local services. That quantity had dropped now to about 250,000, or one-eighth of what it was. That was a testimony to the omnibus competition He did not deplore it, simply because he did not know in Argentina one single instance of suburban traffic paying its way.

They had, however, to serve the public and they had constituted an omnibus company which was doing very successful work and after three or four years' trouble, and some financial loss, was now just turning the corner. It carried last year 3,370,000 passengers, so they were carrying by road more than they had lost on the railway, and in addition they had been able to suppress a non-paying suburban service.

As regards prospects, wine seemed to be reasonably prosperous. Measures were being taken to see that Argentina really got a wholesome wine. They were doing their best to aid by providing in their rolling stock a relatively large number of big tank wagons taking 45 tons of wine each, and they were now transporting a much greater proportion of wine in bulk from Mendoza to Buenos Aires and other centres, where it was bottled.

Their endeavours to extend the cultivation of fruit were being rewarded. A packing and drying plant had been installed, a canning factory was being erected and they had to note a very large increase in vegetable traffic.

They had done, and would continue to do, all they could to develop the district they served. It was enlightened self-interest—to put it like that—but they must come to the point where capital would be short. He had put it to the Pacific stockholders in the same way as he put it now, by saying: Could it be said that the Argentine Government were doing their best in their own interest if they failed to recognise that railway capital should be given a reasonable chance?

The report and accounts were adopted.

Reconstructing Two Famous Cheshire Viaducts, L.M.S.R.

In order to enable heavier and more powerful locomotives to be used between Manchester, Liverpool, and North Wales, the superstructure of the two waterway openings of the Weaver viaduct, carrying the Chester & Warrington Joint Line of the L.M.S. and G.W. Railways 65 ft. above the River Weaver between Frodsham and Halton stations, Cheshire, is to be reconstructed. The reconstruction of these openings and of the opening of the neighbouring Weston viaduct over the Weston Canal (the navigable opening for the Weaver Navigation) involves a good deal of intricate work and will not be completed until the summer of 1940.

Weaver viaduct is 438 yds. long, consisting of 23 brick arches each of 40-ft. span and two cast-iron arched rib openings each of 92-ft. span; the adjoining Weston viaduct has two brick arches of 25-ft. span, and one cast-iron arched rib opening of 92-ft. span. The headway over the waterways may not be permanently reduced and may be lowered only slightly and for short periods whilst reconstruction of the superstructures is in progress. This requirement has to a great extent determined the design to be adopted, which consists of building reinforced concrete arches between the existing cast-iron arched ribs, and to encase the ribs in concrete, thereby making, in effect, complete reinforced concrete arches for the full width of the two railway tracks.

Single-line working will be necessary during reconstruction, and entails a considerable alteration to the layout of the siding accommodation at Halton station. A temporary staging will be erected along the embankment between the two viaducts for storage of materials and plant, and accommodation for workmen, &c. The centring for the new reinforced concrete arches will be suspended from the existing cast-iron ribs; all work will be carried out from rail level.

In work of this nature, great care has to be exercised in the placing of the new concrete to avoid deformation or undue stress of the existing cast-iron arched ribs. With this object portions of the new concrete arches will be laid simultaneously from each abutment and worked in stages to form the completed arches.

NOTES AND NEWS

Brighton-Dyke Branch to be Closed.—It is officially announced by the Southern Railway that the branch to the Dyke (which leaves the main Brighton-Worthing line at Aldrington halt) will be closed from January 1 next. Thereafter traffic will be conveyed by road services.

London Tube Train Derailed.—About 7.30 a.m. on November 14, the rear three cars of a nine-car train were derailed at the south-bound platform of Strand station, Northern Line, L.P.T.B. The coaches left the rails at a crossover when the train was entering the station, hit the platform, and came to a standstill across both tracks, which were blocked. The last two coaches were empty and there were only 15 passengers in the other coach concerned. No one was injured, but traffic was seriously interrupted throughout the day.

American Railways' Financial Difficulties.—The decision was announced in our last issue of the American railways to withdraw their proposal for a 15 per cent. wage reduction in deference to the recommendation of President Roosevelt's emergency board and to public opinion. By way of compensation the railways are promised by the unions their co-operation in securing legislation to protect the industry from "subsidised competition" by water and by road. President Roosevelt is also reported to have renewed his promise of support to the railways in securing legislation of this character.

Road Accidents.—The Ministry of Transport return for October of persons killed or injured in road accidents is as below. The figures in brackets are those for the corresponding period of last year :—

	Killed	Injured
England—		
Pedestrians ...	267 (238)	5,972 (5,660)
Others... ...	271 (292)	11,577 (11,955)
Wales—		
Pedestrians ...	10 (10)	292 (220)
Others... ...	16(14)	473 (462)
Scotland—		
Pedestrians ...	40 (26)	768 (702)
Others... ...	37 (38)	914 (869)
	641(618)	19,996 (19,868)

The total fatalities for the preceding month were 554, compared with 583 in the corresponding period of the preceding year.

S.R. Royal Train for King of Roumania.—King Carol of Roumania and the Crown Prince Michael arrived in England on November 15, having crossed the Channel in H.M.S. *Sikh*. They were met at Dover by the Duke of Kent, and the party left Dover Marine station at 2.29 p.m. The royal train consisted of four Pullman cars, drawn by the Southern Railway "Schools" class engine *Leatherhead*, No. 939. Traffic arrangements were in the hands of Mr. E. J. Missenden, O.B.E., Traffic Manager, who travelled in charge of the royal train. Mr. J. B. Elliot, Assistant General Manager, Mr. O. V. Bulleid, Chief Mechanical Engineer, and Mr. A. Cobb, Locomotive Running Superintendent, also travelled from Dover on the train. The royal party was received at No. 2 platform at Victoria by H.M. The King. Representatives of the Southern Railway who were present were : Mr. R. Holland-Martin, Chairman ; Mr. E. Gore-Brown, Deputy Chairman ; Mr. Gilbert S. Szlumper, General Manager ; and Mr. H. E. O. Wheeler, Superintendent to Operation.

One Class Only in Tasmania.—First and second class accommodation has been abolished on all Tasmanian railways, and a one class system introduced. Reduced running costs and smaller and faster trains are expected to result from this. Old second class carriages are to be renovated to first class standards. The new fares are about 10 per cent. higher than the old second class rate, and 25 per cent. lower than the first, states a Reuters message from Launceston.

Golden Arrow Train, S.R.—The Southern Railway, in continuance of its policy of providing rolling stock of attractive appearance in which passengers will be carried with the maximum possible comfort, put into service last Monday a train of renovated vehicles in its 11 a.m. Golden Arrow Continental service from Victoria to Dover. The vehicles are of Southern Railway standard construction, modernised throughout, together with four renovated Pullman cars. To provide steadier riding, the wheel treads have been coned to 1 in 100 instead of the usual 1 in 20. Internally, the coaches have been equipped in a manner generally similar to that adopted in the recently renovated Bournemouth trains, described and illustrated in THE RAILWAY GAZETTE of July 29, with certain further improvements based upon experience. Externally the coaches are painted a pleasing shade of light olive green. Two "Lord Nelson" class 4-6-0 locomotives have been similarly painted, and together with the cheerful colouring of the Pullman cars in their standard livery, the whole train presents a most attractive appearance.

New Italian Electrifications Opened.—On Monday last, November 14, 3,000-volt d.c. electric traction was inaugurated on the Milan—Bologna—Ancona and the Rome—Leghorn sections of the Italian State Railways, covering a total route of nearly 460 miles. At the same time the old three-phase system was abandoned in favour of the present standard direct current on the Leghorn—Pisa—Viareggio section of the Rome—Genoa line. As a result, important accelerations have been effected. Between Milan and Bologna, 136 miles, there is now a train booked start-to-stop in 113 minutes. Continuing southward, this train reaches Rome 6 hr. after leaving Milan with one further stop, at Florence. The distance is 393 miles. Previously, the fastest train took 6 hr. 55 min. Between Rome and Genoa, a distance of 311 miles *via* Pisa and Leghorn, the fastest train now takes 5 hr. 10 min. The Rome Express has reverted from the Pisa—Florence route to the route *via* Leghorn, effecting an acceleration of 1 hr. 25 min. in each direction. It now reaches Rome at 4.35 p.m., and leaves in the return direction at 11 a.m., instead of 6 p.m. and 12.25 p.m. respectively.

L.M.S.R. Freeholds.—On November 9 and 10 the L.M.S.R. auctioned in Manchester, 82 lots of freeholds yielding a gross rental of £11,600 a year. There were 424 cottages, 30 shops, and a great deal of building land, in and around Manchester. The auctions were conducted by Messrs. Daniel Watney & Sons, and realised £29,550. Early next month, in Bristol, the L.M.S.R. intends to dispose of 70 cottages, a large area of building land, and other freeholds worth £1,865 a year, in 32 lots.

Argentine Railways Face Heavier Loss on Exchange.—According to a Reuters message from Buenos Aires, dated November 10, Mr. J. M. Eddy, a Director of the Buenos Ayres Great Southern and Western Railways, considers that the Argentine Railways will inevitably suffer from the recent decision of the Argentine Government to raise the peso exchange rate from 16 to 17 to the £ for remittances. The effect of this decision, based on last year's figures, is that the railways will be 6 per cent. worse off under the new rate. Based on last year's figures, the Buenos Ayres Great Southern Railway, it is estimated, will lose an additional £78,000 on exchange and the Buenos Ayres Western another £13,740. Mr. Eddy declined to discuss the possibility of the railways effecting a new grain agreement with the Argentine Government similar to that in force in 1936-37.

Northern Ireland Traffics.—Passengers carried on railways wholly in Northern Ireland (excluding season ticket holders) in the first seven months of 1938 numbered 3,297,797, compared with 3,412,659 in the first seven months of 1937, and total passenger receipts fell from £171,529 to £168,575. Merchandise and minerals conveyed in the first seven months of 1938 were 290,857 tons, a decrease of 57,047 tons in comparison with the corresponding period of 1937 ; the number of livestock fell from 143,822 to 116,405, and the total goods traffic receipts from £127,206 to £110,052. On railways partly in Northern Ireland, the ordinary passengers in the first seven months of 1938 were 3,028,400, against 3,105,195 in the first seven months of 1937, and the total passenger receipts of £261,935 were £1,060 lower. Merchandise and mineral tons dropped from 549,096 to 519,480, and the number of livestock from 444,396 to 371,659. Total receipts from goods traffic were £343,081, against £364,334 for the first seven months of 1937.

Forthcoming Events

Nov. 19 (*Sat.*).—Railway Students' Association (London). Visit to Cockfosters Depot, Piccadilly Line.

Nov. 21 (*Mon.*).—G.W.R. (Birmingham) Lecture and Debating Society, at Great Western Hotel, Snow Hill Station, 6.30 p.m. "A Tour Abroad: America," by Mr. A. Lancaster.

Railway Students' Association (London), at London School of Economics, Houghton Street, W.C.2, 6 p.m. "Delivery and Positioning of Exceptional Loads," by Mr. A. Wilson.

Royal Society of Arts, John Street, London, W.C.2, 8 p.m. "Refractory Materials (1)," by Mr. J. Partridge.

Nov. 22 (*Tues.*).—Institute of Transport (Birmingham Graduate), at Chamber of Commerce, New Street, 6.30 p.m. "Transport and First Aid to the Injured," by Mr. E. Morris.

Institution of Civil Engineers, Great George Street, London, S.W.1, 6 p.m. "The Construction of Bridges in Denmark," by Prof. A. Engelund.

Institution of Engineers and Shipbuilders in Scotland, 39 Elmbank Crescent, Glasgow, 7.30 p.m. "Dover Dock Gates," by Mr. R. Biggart.

Institution of Locomotive Engineers (Manchester), at Literary and Philosophical Society, 36, George Street, 7 p.m. "The Exhaust Steam Injector," by Mr. L. Kastner.

Permanent Way Institution (Ashford), at Engineers' Lecture Room, 6.45 p.m. "Some Aspects and Problems connected with the Conveyance of Exceptional Loads by Rail," by Mr. H. Bussell.

Nov. 23 (*Wed.*).—Institution of Civil Engineers (Newcastle), at Co-operative Society's Café, Stockton-on-Tees, 7 p.m. "Movable Bridges," by Mr. H. Budgen.

Institution of Locomotive Engineers (London), at Inst. of Mechanical Engineers, Storey's Gate, S.W.1, 6 p.m. "The Heat Treatment of Metals in Connection with Locomotive and Carriage and Wagon Building," by Mr. A. Page.

Royal Society of Arts, John Street, London, W.C.2, 8.15 p.m. "The Container Testing Laboratory," by Mr. C. Chaplin.

Nov. 24 (*Thurs.*).—Institution of Structural Engineers (London), at 11, Upper Belgrave Street, S.W.1, 6.30 p.m. "Dock Gates," by Mr. F. Easton.

Nov. 25 (*Fri.*).—Institute of Metals, at Thames House, Millbank, London, S.W.1, 7.30 p.m. Supper-Dance.

Joint Committee on Materials and their Testing, at Inst. of Electrical Engineers, Savoy Place, London, W.C.2, 10 a.m. "Non-Destructive Testing."

Permanent Way Institution (Hull), at Lecture Hall, Paragon Station, 6.45 p.m. "Concrete Practice and its Application to Railway Construction," by Mr. W. Bunney.

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 45th Week			Totals to Date		
	1938	1937	Inc. or Dec.	1938	1937	Inc. or Dec.
	£	£	£	£	£	£
L.M.S.R. (6,834¼ mls.)						
Passenger-train traffic...	412,000	419,000	– 7,000	23,684,000	23,679,000	+ 5,000
Merchandise, &c. ...	458,000	543,000	– 85,000	20,259,000	22,406,000	– 2,147,000
Coal and coke ...	262,000	279,000	– 17,000	11,221,000	11,470,000	– 249,000
Goods-train traffic ...	720,000	822,000	– 102,000	31,480,000	33,876,000	– 2,396,000
Total receipts	1,132,000	1,241,000	– 109,000	55,164,000	57,555,000	– 2,391,000
L.N.E.R. (6,315 mls.)						
Passenger-train traffic...	269,000	277,000	– 8,000	15,332,000	15,419,000	– 87,000
Merchandise, &c. ...	331,000	370,000	– 39,000	14,216,000	15,390,000	– 1,174,000
Coal and coke ...	254,000	268,000	– 14,000	10,625,000	11,161,000	– 536,000
Goods-train traffic ...	585,000	638,000	– 53,000	24,841,000	26,551,000	– 1,710,000
Total receipts	854,000	915,000	– 61,000	40,173,000	41,970,000	– 1,797,000
G.W.R. (3,737 mls.)						
Passenger-train traffic...	174,000	174,000	–	9,963,000	10,034,000	– 71,000
Merchandise, &c. ...	194,000	210,000	– 16,000	8,380,000	9,055,000	– 675,000
Coal and coke ...	111,000	123,000	– 12,000	4,833,000	5,037,000	– 204,000
Goods-train traffic ...	305,000	333,000	– 28,000	13,213,000	14,092,000	– 879,000
Total receipts	479,000	507,000	– 28,000	23,176,000	24,126,000	– 950,000
S.R. (2,140 mls.)						
Passenger-train traffic...	271,000	263,000	+ 8,000	14,840,000	14,871,000	– 31,000
Merchandise, &c. ...	63,000	66,000	– 3,000	2,745,500	2,872,000	– 126,500
Coal and coke ...	34,000	32,000	+ 2,000	1,365,500	1,364,000	+ 1,500
Goods-train traffic ...	97,000	98,000	– 1,000	4,111,000	4,236,000	– 125,000
Total receipts	368,000	361,000	+ 7,000	18,951,000	19,107,000	– 156,000
Liverpool Overhead ... (6½ mls.)	1,296	1,271	+ 25	61,179	58,629	+ 2,550
Mersey (4½ mls.) ...	4,513	4,311	+ 202	197,906	189,720	+ 8,186
*London Passenger Transport Board ...	583,400	567,800	+ 15,600	11,330,600	11,260,300	+ 70,300
IRELAND						
Belfast & C.D. pass. (80 mls.)	1,678	1,708	– 30	113,806	117,619	– 3,843
,, ,, goods	475	594	– 119	19,692	22,066	– 2,374
,, ,, total	2,153	2,302	– 149	133,498	139,715	– 6,217
Great Northern pass. (543 mls.)	8,500	8,150	+ 350	504,950	508,600	– 3,650
,, ,, goods	10,800	9,550	+ 1,250	412,650	429,300	– 16,650
,, ,, total	19,300	17,700	+ 1,600	917,600	937,900	– 20,300
Great Southern pass. (2,076 mls.)	27,814	27,141	+ 673	1,674,066	1,671,040	+ 3,026
,, ,, goods	56,485	57,874	– 1,389	1,834,439	1,889,881	– 55,442
,, ,, total	84,299	85,015	– 716	3,508,505	3,560,921	– 52,416

* 20th week (before pooling)

British and Irish Railway Stocks and Shares

Stocks	Highest 1937	Lowest 1937	Prices Nov. 16, 1938	Prices Rise/Fall
G.W.R.				
Cons. Ord. ...	67⅝	55¾	27½	–½
5% Con. Prefce....	127	108	90½	–2
5% Red.Pref.(1950)	113	109	97½	—
4% Deb.	113⅝	102½	102½	–1
4½% Deb.... ...	118	106	104½	—
4½% Deb.... ...	124½	112	110½	—
5% Deb.	136½	122¾	122½	—
2½% Deb.... ...	76	64	66½	—
5% Rt. Charge ...	133 7/16	118	118½	–1½
5% Cons. Guar. ...	133¾	116½	112½	–1
L.M.S.R.				
Ord.	36⅛	25⅝	12¼	–½
4% Prefce. (1923)	82½	65¾	26½	–2
4% Prefce. ...	92½	77¾	48½	–3
5% Red.Pref.(1955)	107¾	102	76½	—
4% Deb.	108	99¼	97½	–2
5% Red.Deb.(1952)	117½	111	108	—
4% Guar. ...	104	95⅞	86½	–3
L.N.E.R.				
5% Pref. Ord. ...	12½	6¾	4	—
Def. Ord.	6¼	3⅝	2⅜	–⅛
4% First Prefce.	79½	63	24½	–3
4% Second Prefce.	31½	21	10	–½
5% Red.Pref.(1955)	101¼	89¾	45½	—
4% First Guar. ...	103	91⅞	77½	–2
4% Second Guar.	97⅝	85½	57½	–1
3% Deb.	84⅛	74	69½	–1
4% Deb.	107¼	98½	92½	–1
5% Red.Deb.(1947)	113½	106½	106½	—
4½% Sinking Fund Red. Deb.	110 5/16	105½	105½	—
SOUTHERN				
Pref. Ord. ...	98⅝	83½	56	—
Def. Ord. ...	27⅞	16¾	13	—
5% Pref.	126 1/16	105 13/16	94½	–2
5% Red.Pref.(1964)	118	110¼	100½	—
5% Guar. Prefce.	133¾	116¾	114½	—
5% Red.Guar.Pref. (1957)	118½	111½	111½	—
4% Deb.	112	101¼	103½	—
5% Deb.	135¾	123½	122½	—
4% Red. Deb. 1962–67	113	105	105½	—
BELFAST & C.D.				
Ord.	5	4	4	—
FORTH BRIDGE				
4% Deb.	106	99½	100½	—
4% Guar. ...	105¾	99	99½	—
G. NORTHERN (IRELAND)				
Ord.	11	5	3	—
G. SOUTHERN (IRELAND)				
Ord.	50	21½	15	+1
Prefce.	61	34	17	–2½
Guar.	94¾	69½	38	–1
Deb.	95	82⅛	58	–4
L.P.T.B.				
4½% "A" ...	123¾	110½	113½	–1
5% "A" ...	135	121½	121½	–1
4½% "T.F.A." ...	108¾	104	104½	—
5% "B" ...	125	114½	115½	—
"C"	99¾	75	75	–½
MERSEY				
Ord.	42⅜	22	20	–
4% Perp. Deb. ...	103	96¾	97½	—
3% Perp. Deb. ...	77⅝	74½	71½	—
3% Perp. Prefce.	68¾	61¼	55	–

RAILWAY AND OTHER REPORTS

Bengal-Nagpur Railway Co. Ltd.—The directors recommend a final dividend of 5s. per £100 ordinary stock, payable on January 2, together with the guaranteed interest of £1 15s. per cent. then due, making a total distribution of 4 per cent. for the year. The total distribution for 1936–37 was also 4 per cent., of which ½ per cent. was paid from reserve.

Antofagasta (Chili) & Bolivia Railway Co. Ltd.—The directors have decided to pay, on account of arrears, a dividend of 1½ per cent. on the five per cent. cumulative preference stock. The payment will be made on December 14. Last June 3¾ per cent. was paid on the stock of which 2½ per cent. represented the balance of dividend payable for 1934 and 1¼ per cent. was on account of 1935.

Buenos Ayres Midland Railway Co. Ltd.—The report for the year to June 30 last of this company, which is controlled jointly by the Buenos Ayres Great Southern and the Buenos Ayres Western Railway Companies, shows that the rent received from the working companies was £164,767, compared with £161,882 for the previous year. After providing for debenture interest, &c., preference interest (£40,000), and the usual 4 per cent. ordinary dividend (£20,000), the sum of £1,567 is left to be carried forward, against £1,562 brought in.

Uruguay Northern Railway Co. Ltd.—Gross receipts for the year to June 30, 1938, amounted to £11,259, against £11,689, and working expenses to £11,090, against £10,923, leaving net receipts £169, against £766. The operating ratio was increased from 93·45 per cent. to 98·50 per cent. Total net income (including £444 from exchange differences) was £634, but was £1,816 short of meeting the interest accrued (£2,450), on the 5 per cent. prior lien debenture stock, and the debit balance forward is increased to £15,692. The decrease of £430 in gross receipts is principally attributable to a general falling off in goods traffic. Maize, wool, and sugar in transit showed the largest decreases. This general decline is due largely to the absence of transit traffic to and from Brazil.

Midland Uruguay Railway Co. Ltd.—The net result for the year to June 30, 1938, was a debit balance of £13,638 (against a profit of £22), after charging interest (£9,692) on the 5 per cent. prior lien debenture stock, transferring £26,808 to redemption account, and providing for income tax and N.D.C. The debit balance forward is increased to £66,414. Gross receipts, at £111,941, showed an increase of £6,223, but the working expenses of £110,073 were £5,733 higher and the operating ratio rose from 92·81 per cent. to 98·33 per cent. Exchange differences brought in £3,008, against £6,123 in the previous year. The increase in sterling gross receipts was almost entirely due to the appreciation in the value of the Uruguayan dollar, as the increase in currency receipts was only $1,003. Total goods traffic was some 3,700 tons less. The principal reason for the increased expenditure, apart from the exchange factor, was an intensive renewal of sleepers.

East Yorkshire Motor Services Limited.—This company, controlled jointly by the L.N.E.R. and Tilling & British Automobile Traction Limited, reports a total revenue for the year ended September 30, 1938, of £310,956, in comparison with £291,640 for the year 1936-37. After deducting all expenses and providing for depreciation, there is a balance of £41,858 (against £37,789) which, with £6,656 brought forward, makes a total of £48,514, against £46,657. The appropriation to General Reserve is £10,000, the same as in the previous year, and the dividend is again 10 per cent., requiring £30,000, leaving £8,514 to be carried forward. H.C. Motor Works Limited, the company's subsidiary, has been liquidated and merged into the business of the main company.

Paraguay Central Railway Co. Ltd.—Gross receipts for the year ended June 30, 1938, amounted to £138,284, against £120,674 for 1936-37. Operating expenses were £95,652, against £82,774, with an operating ratio of 69·17 per cent., compared with 68·59 per cent. Net receipts were, accordingly, £4,732 higher, at £42,632. Including miscellaneous receipts the total revenue was £51,577, which was insufficient by £1,923 to meet the fixed charges for interest on the prior lien and A debenture stocks, which amounted to £53,500. This deficit was provided out of the company's general resources. It is again impossible to provide for any distribution upon the income debenture stocks. The long outstanding dispute between Paraguay and Bolivia upon the Chaco boundary question was settled in August last by the ratification of a peace treaty between the two countries.

Dennis Bros. Ltd.—A final dividend is announced of 8d. on each 1s. share, making 1s. for the year to September 30 last, compared with 1s. 2d. for 1936-37.

Brown Bayley's Steel Works Limited.—A final ordinary dividend is recommended of 10 per cent., free of tax, making with the 5 per cent., tax free, interim distribution, a total of 15 per cent., tax free, for the year ended July 31, 1938. For the previous year preference dividend payments were brought up to date and ordinary dividends were resumed with a payment of 10 per cent., tax free.

Butler Machine Tool Co. Ltd.—Profits for the year ended September 30 last, after providing £3,326 for N.D.C., amounted to £59,679. Income tax absorbs £3,375, and the sum of £5,390 has been written off goodwill and patents, reducing them to the nominal figure of £1. As already announced, a dividend of 15 per cent. and a bonus of 2½ per cent. are to be paid on the ordinary shares, leaving £14,412 to be carried forward. The works were employed to capacity during the year and the volume of orders on hand at September 30 last showed no diminution.

Forthcoming Meetings

Nov. 21 (*Mon.*)—**Entre Rios Railways Co. Ltd.** (Annual) River Plate House, Finsbury Circus, E.C., at 2.30 p.m.

Nov. 22 (*Tues.*).—**Taltal Railway Co. Ltd.** (Annual General), River Plate House, 13, South Place, E.C., at 2.30 p.m.

Nov. 24 (*Thurs.*).—**Paraguay Central Railway Co. Ltd.** (Annual), River Plate House, Finsbury Circus, E.C., at 3 p.m.

Nov. 24 (*Thurs.*).—**Uruguay Northern Railway Co. Ltd.** (Annual), River Plate House, Finsbury Circus, E.C., at 12 noon.

Nov. 24 (*Thurs.*).—**Midland Uruguay Railway Co. Ltd.** (Annual), River Plate House, Finsbury Circus, E.C., at 12.5 p.m.

Metropolitan Graduate and Student Society Dinner

The sixteenth annual reunion dinner of the Metropolitan Graduate and Student Society of the Institute of Transport was held at the Windsor Castle Restaurant, Victoria, London, on November 16. Mr. F. E. P. White, Chairman of the society, presided. Among those also present were :—

Mr. H. F. Burt, Major Bustard, Messrs. N. W. Faulkner, Sidney E. Garcke, A. Winter Gray, A. E. Hammett, J. A. Kay, A. Kelso, D. R. Lamb, R. M. T. Richards, M. D. Robinson, G. F. Sinclair, Gilbert S. Szlumper, T. E. Thomas, B. G. Turner, and E. W. Willis.

Mr. Gilbert Szlumper, C.B.E., General Manager, Southern Railway and President of the Institute of Transport, who was the guest of honour, proposed the toast of "The Metropolitan Graduate and Student Society." After causing much hilarity with an entirely new line in railway humour, in more serious vein he repeated his advice, given at the society's inaugural meeting, in urging everyone connected to use their best efforts to increase the membership of a body which was doing such valuable groundwork. The railway companies, he emphasised, did appreciate their zeal in applying themselves to the perfection of their knowledge of their own business.

Mr. White, in reply, referred briefly to the work of the society, the success of which he attributed largely to the efforts of its Honorary Secretary, Mr. C. F. King, with whose name he coupled that of Mr. G. H. Searle.

Mr. A. R. Palser proposed the toast of "The Visitors," whom he said represented practically every branch of activity in the transport world.

Mr. A. Kelso responded, saying that among the many miracles of the age in which we live, he included that which brought so many forms of transport together under the wings of one great institute.

OFFICIAL NOTICES

Tyne Improvement Commission.

TRAFFIC MANAGER.

THE Tyne Commissioners invite applications from competent persons for the position of Traffic Manager at their Docks and Coal Shipping Staiths. Commencing salary—£750 per annum.

Essential qualifications for the position are: a general knowledge of import and export dock operations, including shipment of coal, and experience in the handling of traffic and the charge of men. The holding of a Board of Trade Mariner's Certificate, whilst not necessary, would be considered a further qualification.

Preference will be given to applicants who have had administrative experience in similar Undertakings.

Candidates must not be over 45 years of age on the 1st of December, 1938.

The successful candidate will be required to devote the whole of his time to the duties of the office and to reside where required by the Commissioners.

Applications on a prescribed form, copies of which can be obtained from the undersigned, will be received up to Saturday, the 3rd of December, 1938, and should be sent under cover addressed to the Chairman and marked "Traffic Manager."

The person appointed will be subject to the provisions of the Commissioners' Superannuation Scheme.

Canvassing, either directly or indirectly, will be a disqualification.

By Order,
ALBERT BLACKLOCK,
General Manager and Secretary.

Tyne Improvement Commission Offices,
Newcastle-upon-Tyne, 1.
8th, November, 1938.

Crown Agents for the Colonies

COLONIAL GOVERNMENT APPOINTMENTS

APPLICATIONS from qualified candidates are invited for the following post:—

SECTION ENGINEER

required for the Nigerian Government Railway for two tours each of 12-24 months, with prospect of permanency. Salary £475-£840 a year. Free passages and quarters and liberal leave on full salary. Candidates, age 23-35, should be Corporate Members of the Institution of Civil Engineers or possess an Engineering degree recognised as granting exemption from Sections A and B of the A.M.I.C.E. examination, and have had practical experience in bridge and reinforced concrete construction. Candidates who are students of the Institution of Civil Engineers and have had the requisite practical experience, are also eligible for consideration.

Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience and mentioning this paper, to the Crown Agents for the Colonies, 4, Millbank, London, S.W.1, quoting M/6607.

THE MADRAS & SOUTHERN MAHRATTA RAILWAY COMPANY LIMITED invite Tenders for:—

30 PAIRS WHEELS AND AXLES FOR WAGONS (BROAD GAUGE).

Specification and Form of Tender can be obtained from the Company's Offices, 123, Victoria Street, Westminster, London, S.W.1.

Fee 10s. 6d., *which will not be returned*.

Tenders must be submitted not later than 2.00 p.m. on TUESDAY, 6TH DECEMBER, 1938.

The Directors do not bind themselves to accept the lowest or any Tender and reserve to themselves the right of reducing or dividing the order.

By Order of the Board,
V. CRASTER,
Secretary.

CONTRACTS AND TENDERS

New Station at Notting Hill Gate, L.P.T.B.

W. & C. French Limited has received the contract from the London Passenger Transport Board for the complete reconstruction of two railway stations at Notting Hill Gate. The contract, valued at £170,000, includes a joint ticket hall under the road for the Metropolitan and District Lines and the Central Line, a passenger and pedestrian subway under the High Street and high-speed escalators in place of lifts to the Central Line platforms. At present, passengers wishing to change between the Metropolitan and District Lines and the Central Line must cross the busy roadway. The Board's experience shows that the provision of direct interchange facilities results in a substantial and profitable increase of traffic. The Board's works are being undertaken in conjunction with the London County Council which will widen the High Street to eliminate the bottle-neck that causes much congestion at this point.

The Westinghouse Brake & Signal Co. Ltd. has received an order from the Bombay, Baroda & Central India Railway Administration, to the inspection of Messrs. Rendel, Palmer & Tritton, for electrical signalling materials, including 12 time element relays and five resonated impedance bonds.

The Mysore State Railway Administration has placed the following orders to the inspection of Messrs. Rendel, Palmer & Tritton:—

Glasgow Railway Engineering Co. Ltd.: 50 wheels complete with tyres.

Carters Merchants Limited on behalf of Skoda Works Limited: Duplicate parts for locomotives comprising eight pairs of wheels and axles and 24 piston rods.

Yorkshire Engine Co. Ltd.: 104 superheater elements.

The Superheater Co. Ltd. has received an order from the Bengal-Nagpur Railway Administration for superheater headers and elements.

The American Locomotive Company has received an order for four narrow-gauge engines from Brazil. This is in addition to the business negotiated last summer.

Locomotives for Iraq

Robert Stephenson & Hawthorns Limited has received an order from the Crown Agents for the Colonies for four streamlined Pacific type locomotives for the Iraq Railways. These locomotives, which will burn oil fuel and weigh, complete with tender, in working order approximately 160 tons, are the first streamlined steam engines to be built in a contractor's work in this country, while the large electric locomotives for New Zealand designed by the same firm were the first streamlined electric locomotives.

The Crown Agents for the Colonies have recently placed the following orders:—

Arthur Lyon & Company: Arc lights.

Turners Asbestos Cement Company: Asbestos cement pipes.

English Drilling Equipment Co. Ltd.: Boring equipment.

Brown Bayley's Steel Works Limited: Carriage and wagon tyres.

Thos. Firth & John Brown Limited: Carriage and wagon tyres.

Taylor Bros. & Co. Ltd.: Carriage and wagon tyres.

Tees Side Bridge & Engineering Works Limited: Clear span deck bridges.

Stanton Ironworks Co. Ltd.: Cast-iron pipes.

British Copper Refiners Limited: Copper ingots.

Yorkshire Copper Works Limited: Copper tubes.

Ailsa Craig Limited: Diesel engine.

W. T. Henley's Telegraph Works Co. Ltd.: Dry core cable.

Wolverhampton Corrugated Iron Co. Ltd.: Galvanised corrugated steel sheets.

R. & W. Maclellan Limited: Galvanised plates, steel and manganese steel angles.

Wellington Tube Works Limited: Galvanised iron tubing.

J. Lang & Sons Limited: Lathe.

R. Stephenson & Hawthorns Limited: Locomotive copper fireboxes.

Whitehead Iron & Steel Co. Ltd.: Manganese steel bars.

Phosphor Bronze Co. Ltd.: Phosphor bronze.

Babcock & Wilcox Limited: Pipework.

The Gondal Railway Administration has placed orders to the inspection of Messrs. Robert White & Partners with Steel, Peech & Tozer for 77 laminated springs for locomotives, carriages, and wagons, and with Thos. Firth & John Brown Limited for 64 helical springs.

Electric Travelling Crane required for New Zealand

The New Zealand Public Works Department is calling for tenders (No. P.W. 59/309/3) for the supply and delivery of one 80-ton four-motor electric overhead travelling crane, complete with main and auxiliary hooks, crane rail, collectors, and trolley wire. The motors are to be suitable for three-phase 50 cycle 400 volts between phases. Tenders endorsed "Tender for 80 ton Travelling Electric Crane—Waikaremoana" should reach the Secretary, Public Works Supplies and Tenders Committee, Government Buildings, Wellington, New Zealand, by February 14. 1939. A copy of the specification and conditions of contract may be borrowed from the Department of Overseas Trade, London, S.W.1.

Tenders are invited by the Bombay, Baroda & Central India Railway Adminstration, receivable by December 9, at the White Mansion, 91, Petty France, Westminster, S.W.1, for the supply of axles and tyres for wagons.

The Indian Stores Department is calling for tenders (Order No. N-9787), receivable in New Delhi by December 5, for the supply and delivery of quantities of steel axles and tyres. A copy of the schedule and general conditions of tender, together with drawings, may be borrowed from the Department of Overseas Trade, London, S.W.1.

J. W. Roberts Limited, asbestos manufacturer of Armley, Leeds, announces removal of the London office from 54, Old Broad Street to Bush House, W.C.2, as from November 28. The new telephone number will be Temple Bar 7311.

Railway Share Market

The general trend of the stock and share markets has been reactionary this week. Sentiment was influenced by the developments in European political affairs, and in most sections selling pressure was in evidence, although subsequently the lower prices were inclined to attract buyers on the hope that markets may improve if the details of the Anglo-American trade agreement create a good impression.

Home railway securities were lower in many cases, but this was attributed mainly to the surrounding market tendency, although the depressing traffics for the past week naturally had an adverse influence. Southern Railway stocks had the steadiest appearance, but the preferred was lower at 56, as was the deferred at 12¾, while the 5 per cent. preference changed hands around 94½, and the 4 per cent. debentures made the rather lower price of 103½. L.M.S.R. stocks were marked down on the large decrease in the past week's receipts. The ordinary transferred around 12, the 4 per cent. preference around 49½ and the 1923 preference around 27. Moreover, the 4 per cent. guaranteed reacted sharply to 87 and the 4 per cent. debentures to 98. As in the case of other debentures and guaranteed securities of the main-line railways, prices would appear to be at unduly low levels, although there is probably little scope for improvement until the general trend of markets becomes buoyant. With the exception of L.N.E.R. second guaranteed, there is, of course, no reason to doubt that interest payments will be made in full, even should traffics for the remainder of the year fail to show a better tendency. The last-named stock has moved down to 56 and the first guaranteed of the L.N.E.R. is now 78. Moreover, the railway's 3 per cent. debentures have made the lower price of 69½ and the 4 per cent. debentures are 93½. Great Western ordinary was reduced to 27½, the 5 per cent. guaranteed stock to 113 and the 4 per cent. debentures to 103, while the 5 per cent. preference is now 90½, or four points below the equivalent stock of the Southern Railway. London Transport "C" remained relatively steady around 75, and the "A" and "B" stocks, as usual, had a firm appearance.

Argentine railway securities were again lower on balance owing to continued uncertainty as to whether the Argentine Government's recent exchange decree will apply to the railways. Nevertheless, buyers were in evidence for ordinary stocks of the B.A. Gt. Southern and those of the other leading companies, as the fall in values appears to have been carried too far, assuming that crop prospects remain encouraging. Debenture stocks were neglected, although in the case of those of the B.A. Gt. Southern and Central Argentine they would seem to be at unduly low levels and they will doubtless improve when general market conditions are less uncertain. Until the latter is the case, however, dealers will probably be reluctant to add to their books, and consequently only a small amount of selling may reflect adversely on prices. San Paulo ordinary made a lower price, but Antofagasta improved on the further preference dividend payment.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1937-38	Week Ending	Traffics for Week: Total this year	Traffics for Week: Inc. or Dec. compared with 1937	No. of Weeks	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1937	Prices: Lowest 1937	Prices: Nov. 16, 1938	Prices: Yield £ (See Note)
				£	£		£	£	£					
South & Central America	Antofagasta (Chili) & Bolivia	834	13.11.38	15,180	+ 670	46	676,230	754,490	− 78,260	Ord. Stk.	29	10¼	9	Nil
	Argentine North Eastern	753	12.11.38	8,715	+ 2,673	20	211,512	198,327	+ 13,185	,,	19¼	6	5½	Nil
	Argentine Transandine	—	—	—	—	—	—	—	—	A. Deb.	93½	60	80	5
	Bolivar	174	Oct., 1938	3,550	— 150	44	37,200	53,050	− 15,850	6 p.c. Deb.	9½	5	8½	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds.	17	9	6	85/6
	Buenos Ayres & Pacific	2,806	12.11.38	70,873	− 2,018	20	1,391,968	1,581,788	− 169,820	Ord. Stk.	17⅛	5½	4½	Nil
	Buenos Ayres Central	190	29.10.38	$113,600	− $17,300	18	$2,159,300	$2,546,700	− $387,400	Mt. Deb.	41½	18	16	Nil
	Buenos Ayres Gt. Southern	5,084	12.11.38	116,981	− 15,091	20	2,389,190	2,408,003	− 18,813	Ord. Stk.	33¾	13½	10½	Nil
	Buenos Ayres Western	1,930	12.11.38	45,755	− 3,004	20	765,916	909,120	− 143,204	,,	31¾	11¼	7½	Nil
	Central Argentine	3,700	12.11.38	94,517	− 22,682	20	1,992,434	2,581,333	− 568,899	,,	34¼	10¾	9½	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	20½	4½	3½	Nil
	Cent. Uruguay of M. Video	972	5.11.38	20,010	+ 2,442	19	314,559	295,938	+ 18,621	Ord. Stk.	67/32	2	2	Nil
	Cordoba Central	1,218	—	—	—	—	—	—	—	Ord. Inc.	6¼	1½	3¼	Nil
	Costa Rica	188	Sept., 1938	28,168	− 973	13	74,983	78,446	− 3,463	Stk.	38	27	24	85/16
	Dorada	70	Oct., 1938	15,800	+ 1,100	44	163,800	154,300	+ 9,500	1 Mt. Db.	107	103	105	511/16
	Entre Rios	810	12.11.38	15,330	+ 6,304	20	305,818	268,024	+ 37,794	Ord. Stk.	19 7/16	6	6	Nil
	Great Western of Brazil	1,092	12.11.38	11,200	− 900	46	323,900	354,400	− 30,500	Ord. Sh.	¾	1⅛	1¼	Nil
	International of Cl. Amer.	794	Sept., 1938	$371,340	− $15,056	39	$4,189,954	$4,341,014	− $151,060	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref.	2/	1/-	½	Nil
	La Guaira & Caracas	22¾	Oct., 1938	6,230	+ 2,075	44	53,110	51,820	+ 1,290	Stk.	8½	6	8½	Nil
	Leopoldina	1,918	12.11.38	23,418	+ 2,556	46	960,673	1,061,690	− 101,017	Ord.Stk.	9¼	3	2	Nil
	Mexican	483	7.11.38	$237,800	− $3,400	19	$4,879,700	$5,542,900	− $663,200	,,	1½	1¼	1⅛	Nil
	Midland of Uruguay	319	Oct., 1938	9,090	− 181	18	34,073	33,065	+ 1,008	,,	1⅞	1½	1½	Nil
	Nitrate	386	31.10.38	6,486	+ 2,384	44	122,292	126,347	− 4,055	Ord. Sh.	31/16	2	1¾	511/16
	Paraguay Central	274	12.11.38	$2,934,000	+ $87,000	20	$59,097,000	$62,748,000	− $3,651,000	Pr. Li. Stk.	84	79¼	57½	5⅝
	Peruvian Corporation	1,059	Oct., 1938	65,795	− 18,482	18	278,342	347,951	− 69,609	Pref.	14⅝	4½	2¾	Nil
	Salvador	100	5.11.38	¢10,478	− ¢3,172	19	¢209,939	¢229,484	− ¢19,545	Pr. Li. Db.	23½	21½	22½	Nil
	San Paulo	153½	6.11.38	30,225	+ 2,201	45	1,390,473	1,456,334	− 65,861	Ord. Stk.	98½	56	34	11¾
	Taltal	160	Oct., 1938	3,885	+ 1,070	18	11,785	12,885	− 1,100	Ord. Sh.	17/16	11/16	5/8	16
	United of Havana	1,353	12.11.38	13,135	− 2,000	20	317,289	332,507	− 15,218	Ord. Stk.	5⅝	31/32	1	Nil
	Uruguav Northern	73	Oct., 1938	1,119	+ 157	18	3,900	3,382	+ 518	Deb. Stk.	10	2	2	Nil
Canada	Canadian National	23,723	7.11.38	802,393	− 11,228	45	30,856,910	33,894,353	− 3,037,442	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	— 4 p.c.	Perp. Dbs.	77	62½	69½	5¾
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	101⅞	94½	102½	3⅞
	Canadian Pacific	17,186	7.11.38	652,600	+ 42,200	45	24,108,800	24,576,600	− 467,800	Ord. Stk.	18	7¼	7	Nil
India†	Assam Bengal	1,329	20.10.38	49,140	+ 13,699	28	789,930	736,081	+ 53,849	Ord. Stk.	86	73½	77½	3⅞
	Barsi Light	202	20.10.38	3,075	+ 615	28	78,900	70,132	+ 8,768	Ord. Sh.	66½	46	58½	613/16
	Bengal & North Western	2,116	20.10.38	70,078	+ 312	3	138,783	129,863	+ 8,920	Ord. Stk.	317	301	285	15/6
	Bengal Dooars & Extension	161	31.10.38	5,820	+ 781	29	87,811	86,522	+ 1,289	,,	100	84	87½	7 7/16
	Bengal-Nagpur	3,268	31.10.38	197,475	+ 1,989	29	3,929,513	4,014,049	− 84,536	,,	101	89	94½	4¼
	Bombay, Baroda & Cl. India	3,085	10.11.38	238,650	+ 27,300	30	5,198,025	5,258,850	− 60,825	,,	113	110½	108½	5½
	Madras & Southern Mahratta	2,967	31.10.38	152,025	+ 7,080	29	3,169,368	3,034,847	+ 134,521	,,	110	105	105½	8½
	Rohilkund & Kumaon	571	20.10.38	12,863	+ 149	3	25,238	24,813	+ 425	,,	314	302	285	15/6
	South Indian	2,531§	20.10.38	116,958	− 5,389	28	2,331,554	2,346,405	− 14,851	,,	103½	99½	102½	4⅝
Various	Beira-Umtali	204	Sept., 1938	83,497	− 14,556	52	1,037,185	975,721	+ 61,464	—	—	—	—	—
	Egyptian Delta	620	31.10.38	8,739	− 2,063	29	128,467	138,048	− 9,581	Prf. Sh.	31/-	5/4	½	Nil
	Kenya & Uganda	1,625	Aug., 1938	182,150	− 14,527	35	1,860,357	1,920,155	− 59,798	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb.	48⅛	43½	45	7¾
	Midland of W. Australia	277	Sept., 1938	17,029	+ 2,026	13	44,686	37,926	+ 6,760	Inc. Deb.	98	93½	90	4⅞
	Nigerian	1,900	1.10.38	24,087	− 15,790	27	775,935	1,256,855	− 480,920	—	—	—	—	—
	Rhodesia	2,442	Sept., 1938	410,764	− 21,548	52	4,950,384	4,635,398	+ 314,986	—	—	—	—	—
	South Africa	13,243	22.10.38	623,428	− 53,741	30	18,136,293	18,835,444	− 699,151	—	—	—	—	—
	Victoria	4,774	Aug., 1938	762,903	+ 61,343	9	1,479,248	1,421,092	+ 58,156	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/16

† Receipts are calculated @ 1s. 6d. to the rupee § ex dividend

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being overestimated. The statements are based on the current rates of exchange and not on the par value